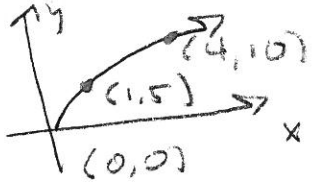
121 WP #2

50

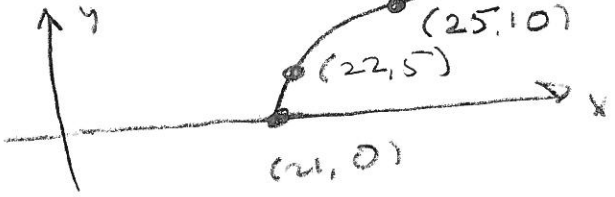
① $g(x) = 5\sqrt{3x-21} - 2$

⓪ $f(x) = \sqrt{x}$

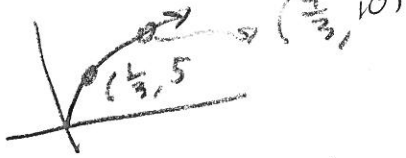
① $5f(x) = 5\sqrt{x}$



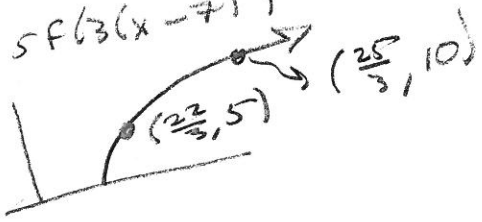
② $5f(x-21) = 5\sqrt{x-21}$



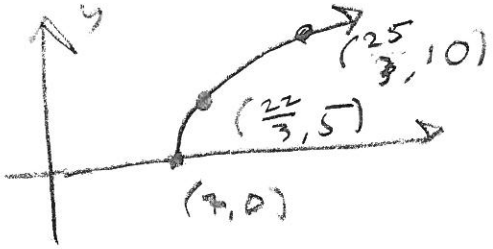
2b $5f(3x)$



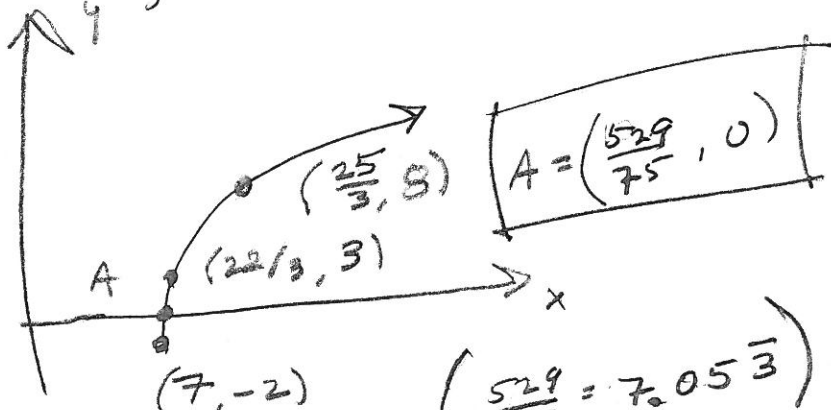
3b $5f(3(x-7))$



③ $5f(3x-21) = 5\sqrt{3x-21}$



④ $g(x) = 5\sqrt{3x-21} - 2$



A: $5\sqrt{3x-21} - 2 = 0$

$5\sqrt{3x-21} = 2$

$\sqrt{3x-21} = \frac{2}{5}$

$3x-21 = \frac{4}{25}$

$3x = \frac{525}{25} + \frac{4}{25} = \frac{529}{25}$

$A = \left(\frac{529}{75}, 0\right)$

$x = \frac{529}{75}$

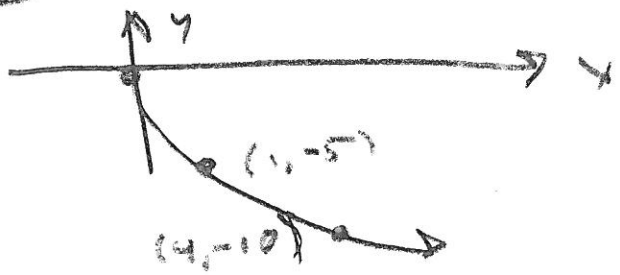
$\left(\frac{529}{75} = 7.05\overline{3}\right)$

121 WP #2

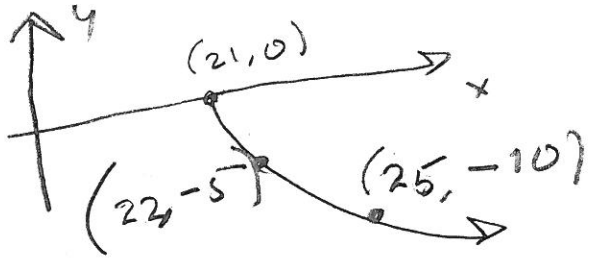
(3) $g(x) = -5\sqrt{3x-21} + 2$

(0) $f(x) = \sqrt{x}$ (See #1)

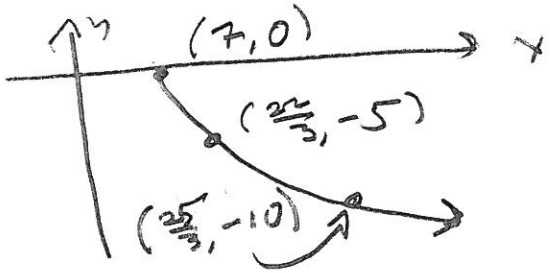
(1) $-5f(x) = -5\sqrt{x}$



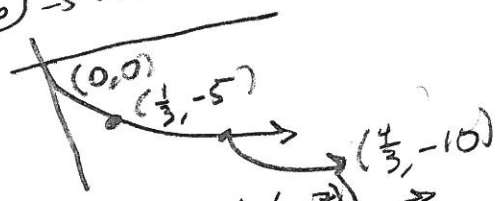
(2) $-5f(x-21) = -5\sqrt{x-21}$



(3) $-5f(3x-21) = -5\sqrt{3x-21}$

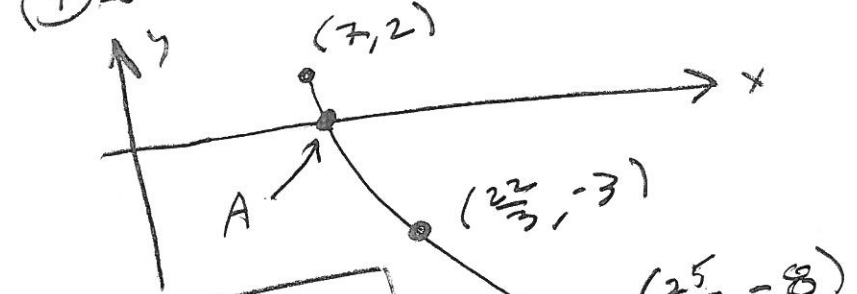


(2b) $-5f(3x)$



(3b) $-5f(3(x-7))$

(4) $-5f(3x-21) + 2 = g(x) = -5\sqrt{3x-21} + 2$



$A = \left(\frac{529}{75}, 0\right)$

$\left(\frac{529}{75} = 7.05\overline{3}\right)$

$\sqrt{3x-21} = \frac{2}{5}$

$3x - 21 = \frac{4}{25}$

$3x = \frac{529}{25}$

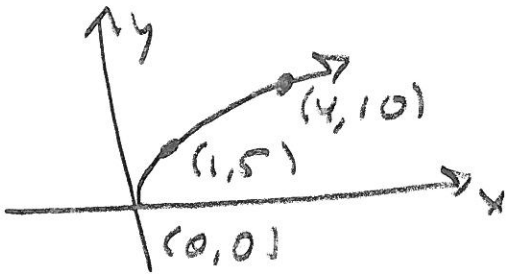
$x = \frac{529}{75}$

121 WP#2

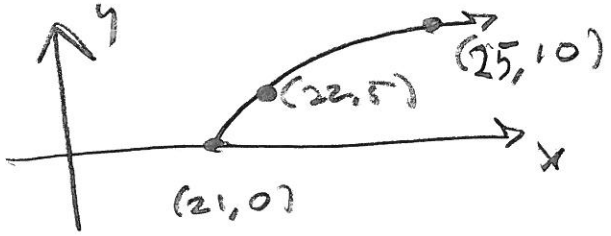
(3) $g(x) = 5\sqrt{-3x-21} - 11$

(0) See #1 $f(x) = \sqrt{x}$

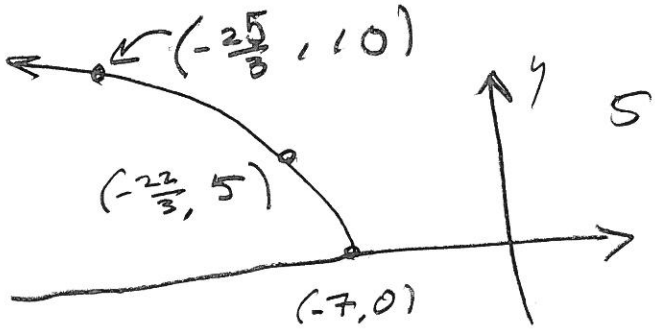
(1) $5f(x) = 5\sqrt{x}$



(2) $5f(x-21) = 5\sqrt{x-21}$

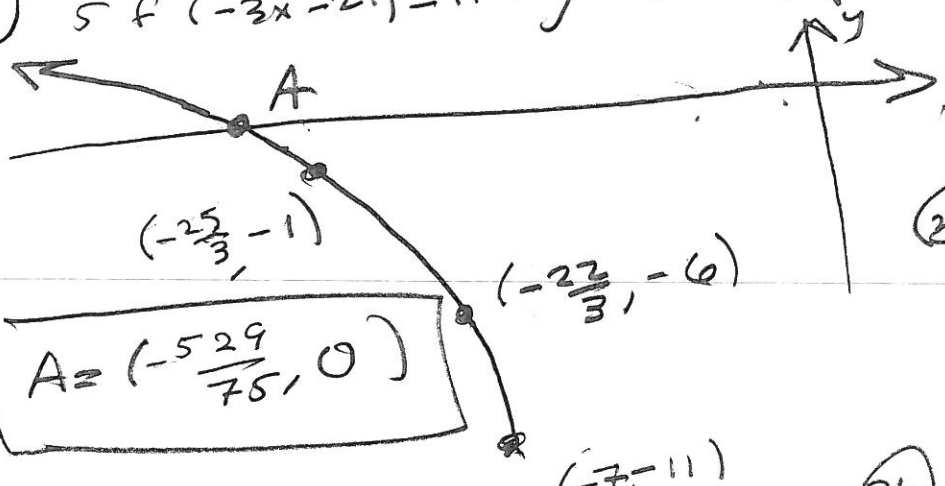


(3)



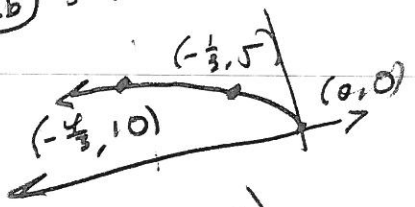
$5f(3x-21) = 5\sqrt{3x-21}$

(4) $5f(-3x-21) - 11 = g(x) = 5\sqrt{-3x-21} - 11$

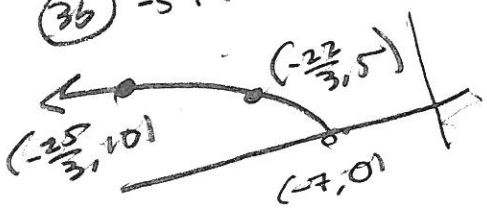


$A = (-\frac{529}{75}, 0)$

(2b) $5f(-3x)$



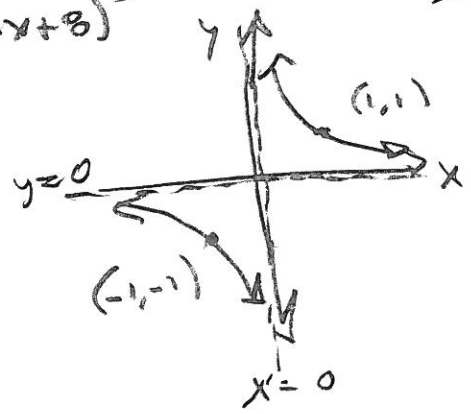
(3b) $-5f(-3(x+7))$



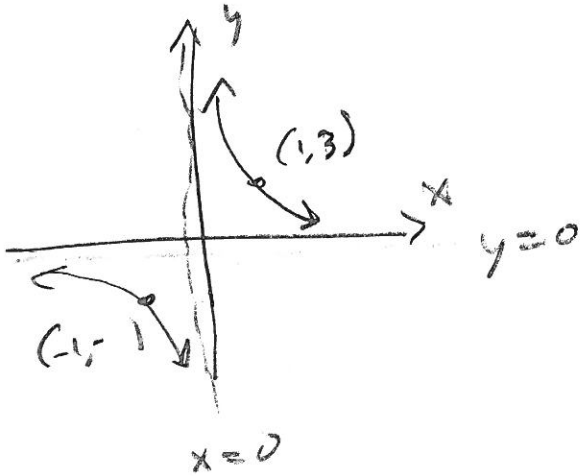
121 WP #2

(4) $g(x) = \dfrac{3}{(-2x+8)^3} + 5$

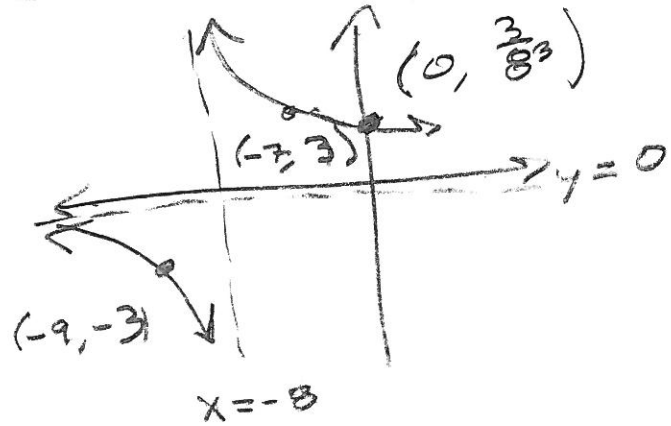
(0) $f(x) = \dfrac{1}{x^3}$



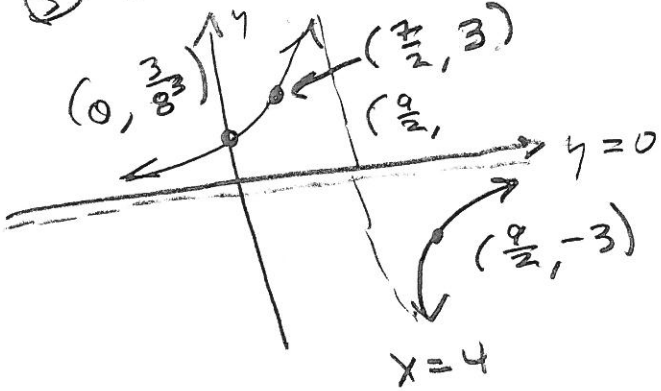
(1) $3f(x) = 3\left(\dfrac{1}{x^3}\right)$ or $\dfrac{3}{x^3}$



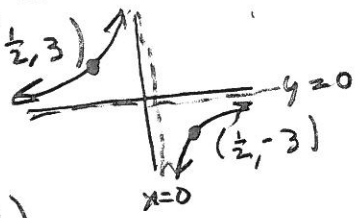
(2) $3f(x+8) = 3\left(\dfrac{1}{(x+8)^3}\right)$



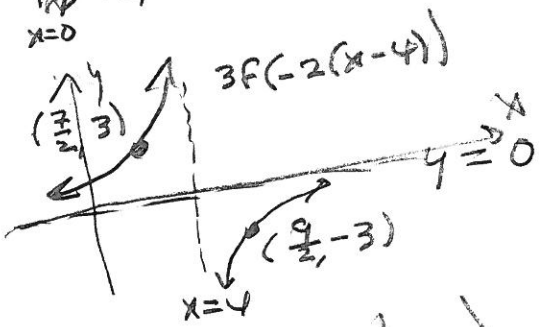
(3) $3f(-2x+8) = 3\sqrt{-2x+8}$



(26) $3f(-2x)$



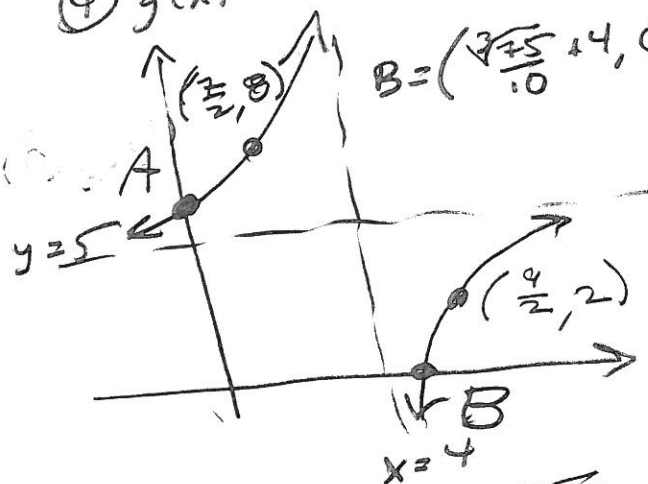
$3f(-2(x-4))$



(4) $g(x)$

$A = \left(0, \dfrac{3}{8^3} + 5\right)$

$B = \left(\dfrac{\sqrt[3]{75}}{10} + 4, 0\right)$



B: $\dfrac{3}{(-2x+8)^3} + 5 = 0$

$3 = -5(-2x+8)^3 \Rightarrow (-2x+8)^3 = -\dfrac{3}{5}$

$-2x+8 = \sqrt[3]{-\dfrac{3}{5}} = -\dfrac{\sqrt[3]{75}}{5}$

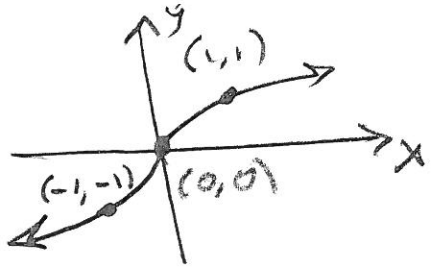
$-2x = -\dfrac{\sqrt[3]{75}}{5} - 8$

$x = \dfrac{\sqrt[3]{75}}{10} + 4$

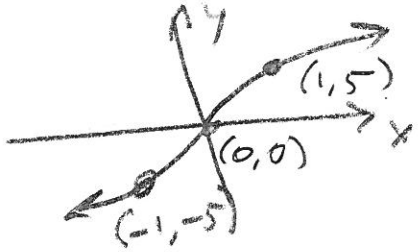
121 WP #2

(5) $5\sqrt[5]{3x+21} - 6 = g(x)$

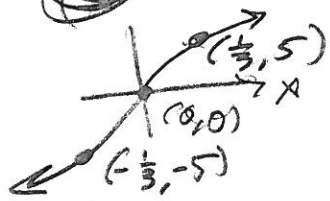
(0) $f(x) = \sqrt[5]{x}$



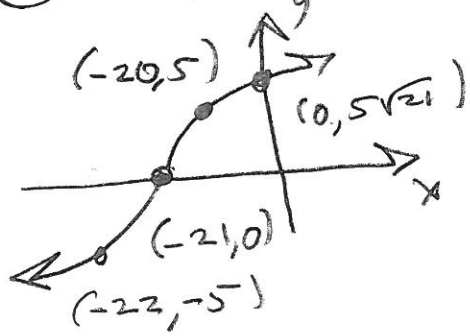
(1) $5f(x) = 5\sqrt[5]{x}$



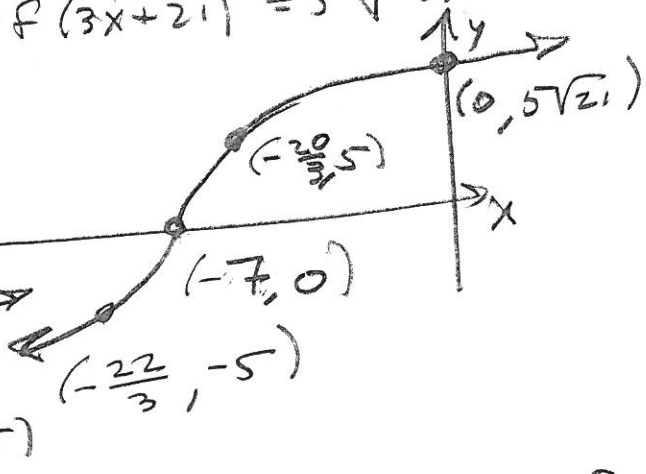
(2b) $5f(3x)$



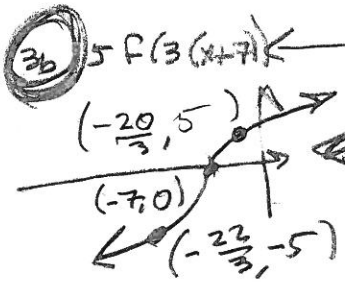
(2) $5\sqrt[5]{x+21}$



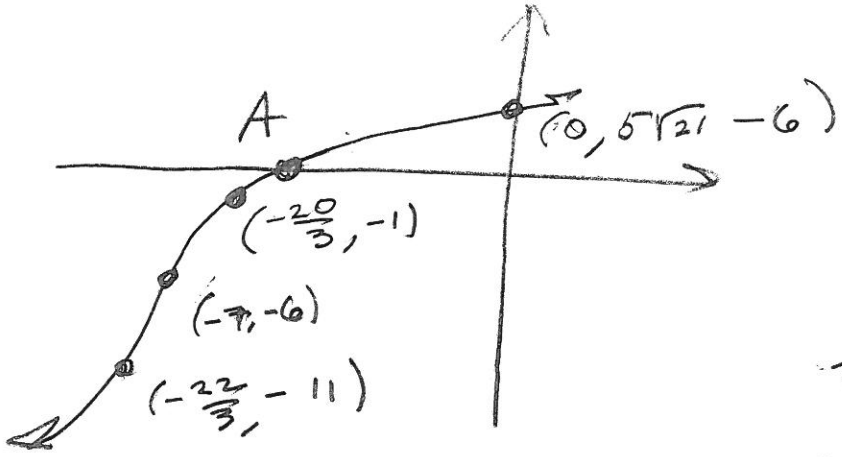
(3) $5f(3x+21) = 5\sqrt{3x+21}$



(3b) $5f(3(x+7))$



(4)



$5\sqrt[5]{3x+21} - 6 = 0$

$5\sqrt[5]{3x+21} = 6$

$\sqrt[5]{3x+21} = \frac{6}{5}$

$3x+21 = \left(\frac{6}{5}\right)^5$

$3x = \left(\frac{6}{5}\right)^5 - 21$

$x = \frac{\left(\frac{6}{5}\right)^5 - 21}{3}$

$= \frac{1}{3}\left(\frac{6}{5}\right)^5 - 7$

$A = \left(\frac{1}{3}\left(\frac{6}{5}\right)^5 - 7, 0\right)$

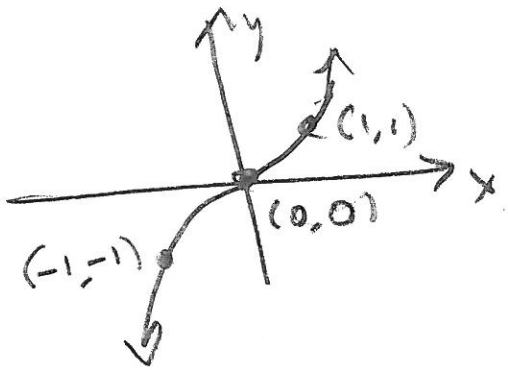
$\approx (-6.17056, 0)$ only

because some silly person will go to calculator

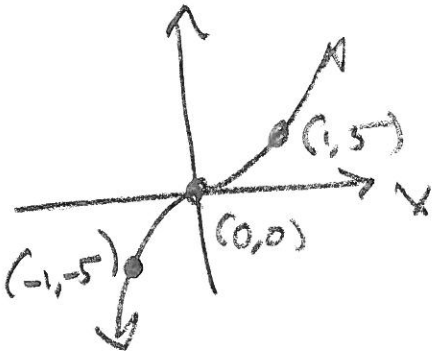
121 WP #2

(6) $g(x) = 5(3x+21)^5 - 6$

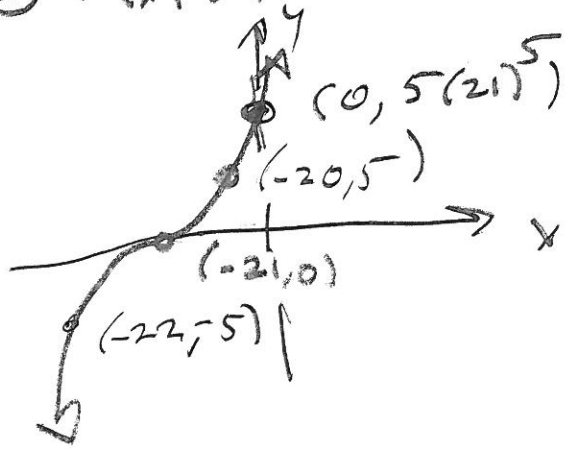
(0) $f(x) = x^5$



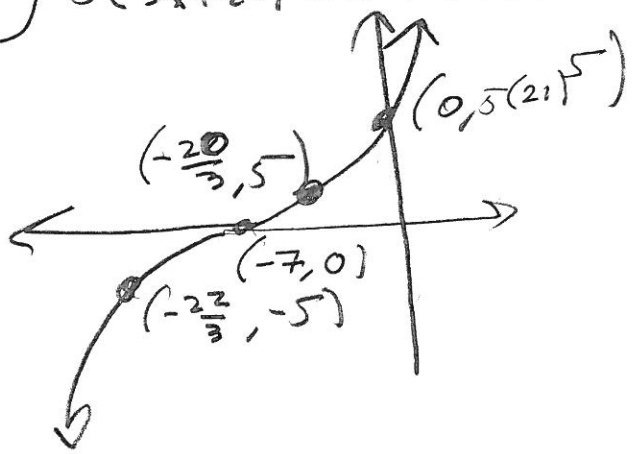
(1) $5f(x) = 5x^5$



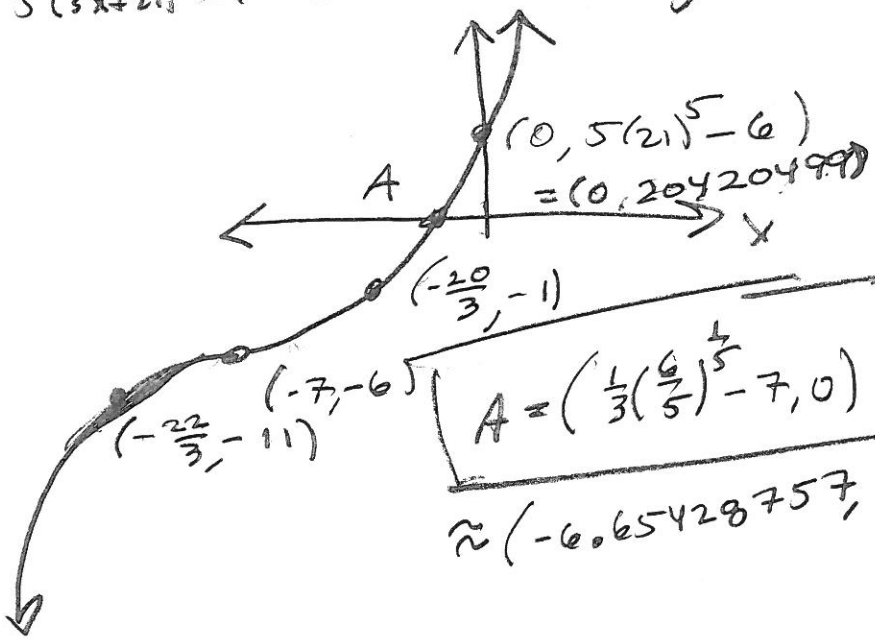
(2) $5(x+21)^5 = 5f(x)$



(3) $5(3x+21)^5 = 5f(3x+21)$



(4) $5(3x+21)^5 - 6 = 5f(3x+21) - 6 = g(x)$



A: $5(3x+21)^5 = 6$

$(3x+21)^5 = \frac{6}{5}$

$3x+21 = \sqrt[5]{\frac{6}{5}}$

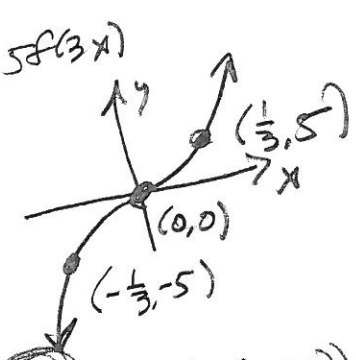
$3x = \sqrt[5]{\frac{6}{5}} - 21$

$x = \frac{1}{3}\sqrt[5]{\frac{6}{5}} - 7$

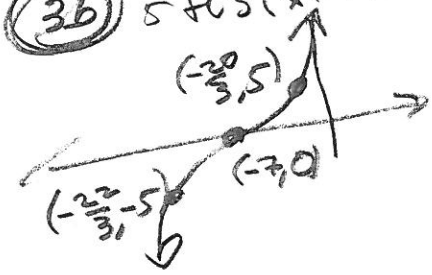
$A = \left(\frac{1}{3}\left(\frac{6}{5}\right)^{\frac{1}{5}} - 7, 0\right)$

$\approx (-6.654287570, 0)$

(2b) $5f(3x)$



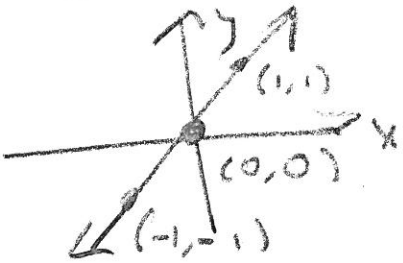
(3b) $5f(3(x+7))$



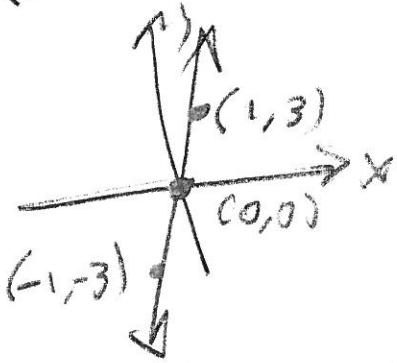
121 WP #2

(7) $g(x) = 3(x+5) - 7$

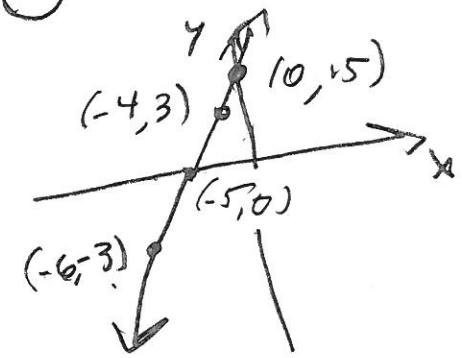
(0) $f(x) = x$



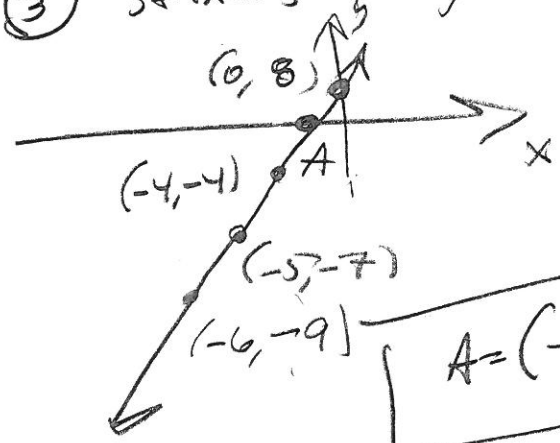
(1) $3f(x) = 3x$



(2) $3f(x+5) = 3(x+5)$



(3) $3f(x+5) - 7 = g(x)$



$A = \left(-\frac{8}{3}, 0\right)$

A: $3(x+5) - 7 = 0$

$3(x+5) = 7$

$x+5 = \frac{7}{3}$

$x = -\frac{15}{3} + \frac{7}{3} = -\frac{8}{3}$

$3x + 15 - 7 = 0$

$3x + 8 = 0$

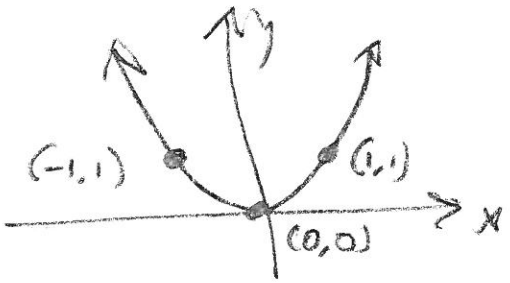
$3x = -8$

$x = -\frac{8}{3}$

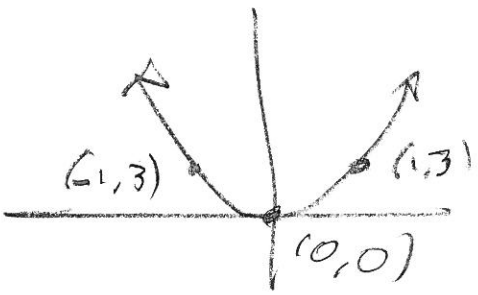
121 WP#2

(8) $3(x+5)^2-7$

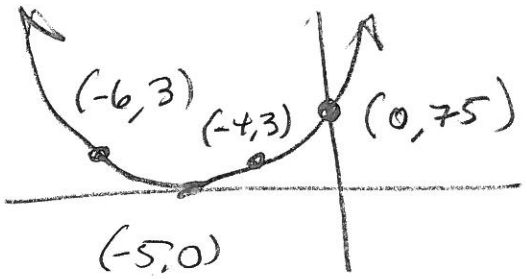
(0) $f(x)=x^2$



(1) $3f(x)=3x^2$



(2) $3f(x+5)=3(x+5)^2$



(3) $3f(x+5)-7=g(x)=3(x+5)^2-7$

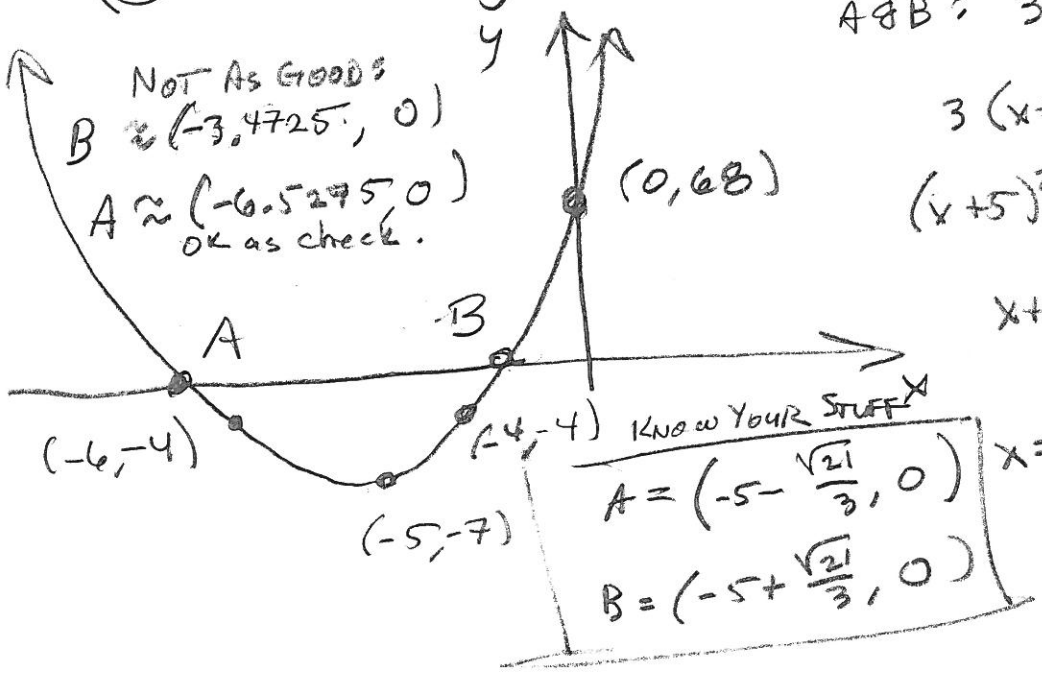
A & B: $3(x+5)^2-7=0$

$3(x+5)^2=7$

$(x+5)^2=\frac{7}{3}$

$x+5=\pm\sqrt{\frac{7}{3}}$

$x=-5\pm\frac{\sqrt{21}}{3}$



KNOW YOUR STUFF

$A=\left(-5-\frac{\sqrt{21}}{3},0\right)$

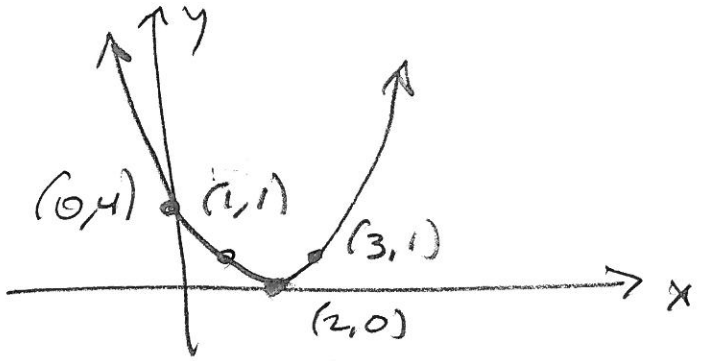
$B=\left(-5+\frac{\sqrt{21}}{3},0\right)$

121 WP #2

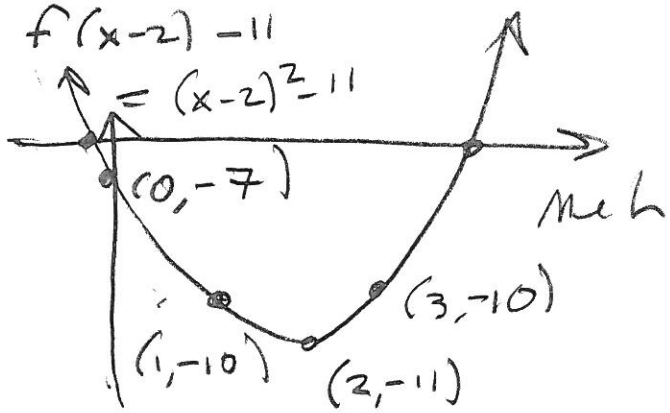
(9) $g(x) = x^2 - 4x - 7 = x^2 - 4x + 2^2 - 4 - 7$

$= (x-2)^2 - 11$

(0) See prev. (1) $f(x-2) = (x-2)^2$



(2) $f(x-2) - 11 = (x-2)^2 - 11$

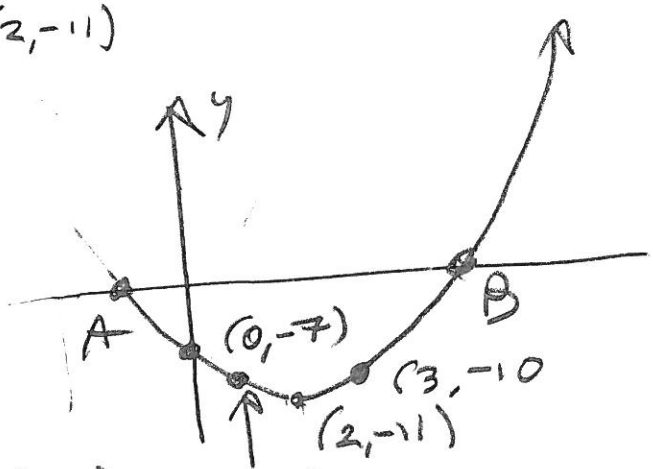


A & B: $(x-2)^2 - 11 = 0$

$(x-2)^2 = 11$

$x - 2 = \pm\sqrt{11}$

$x = 2 \pm \sqrt{11}$



$A = (2-\sqrt{11}, 0) \approx (-1.3166, 0)$

$B = (2+\sqrt{11}, 0) \approx (5.3166, 0)$

121 WP #2

(10) $g(x) = 4x^2 + 5x + 17$

$= 4\left(x^2 + \frac{5}{4}x \quad\right) + 17$

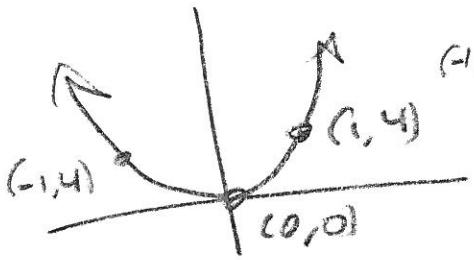
$= 4\left(x^2 + \frac{5}{4}x + \left(\frac{5}{8}\right)^2\right) + 17 - 4\left(\frac{25}{64}\right)$

$= 4\left(x + \frac{5}{8}\right)^2 + \frac{247}{16}$

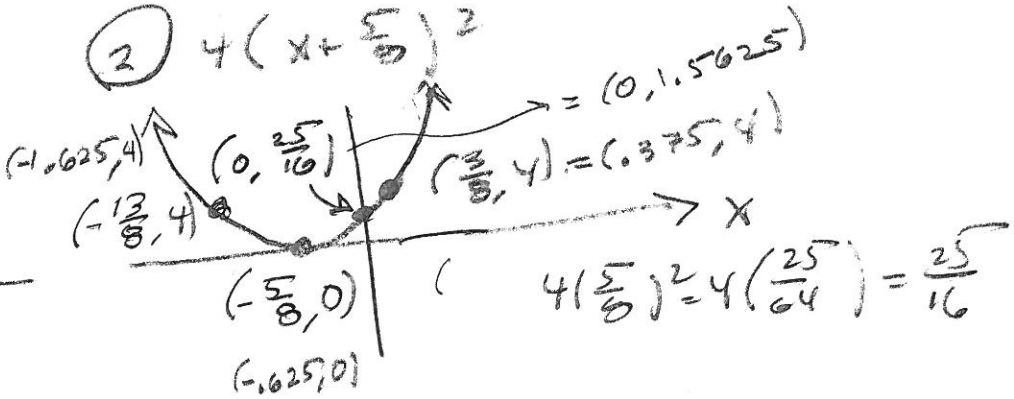
$17 - \frac{25}{16}$

$= \frac{272 - 25}{16} = \frac{247}{16}$

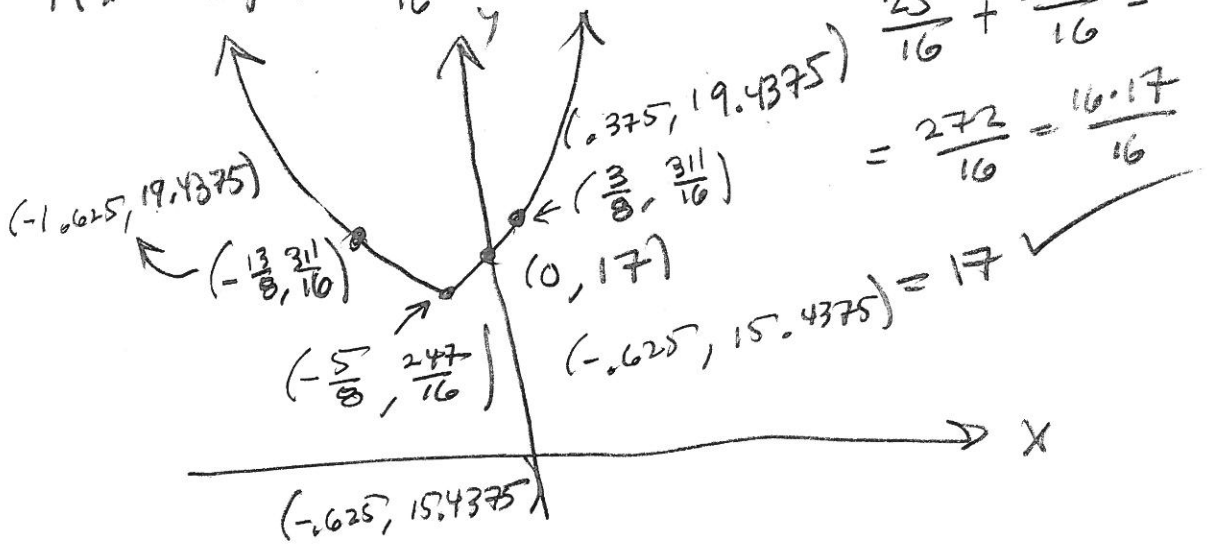
(1) $4x^2$



(2) $4\left(x + \frac{5}{8}\right)^2$



(3) $4\left(x + \frac{5}{8}\right)^2 + \frac{247}{16}$



$\frac{25}{16} + \frac{247}{16} = \frac{272}{16} = \frac{16 \cdot 17}{16} = 17$ ✓