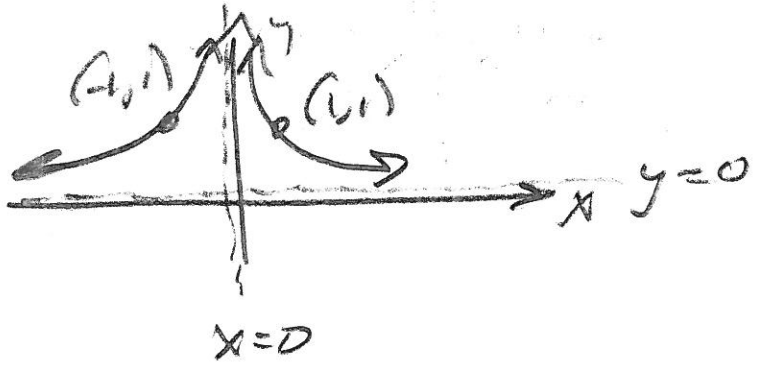
121 wp 2

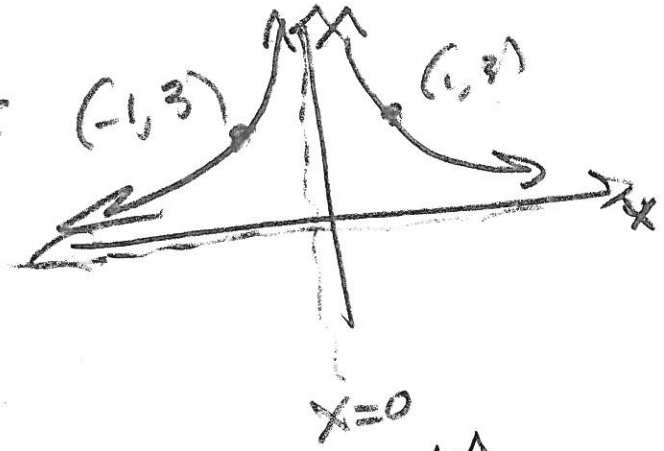
① $g(x) = \frac{3}{(5x-15)^2} - 6$

⓪ $f(x) = \frac{1}{x^2}$



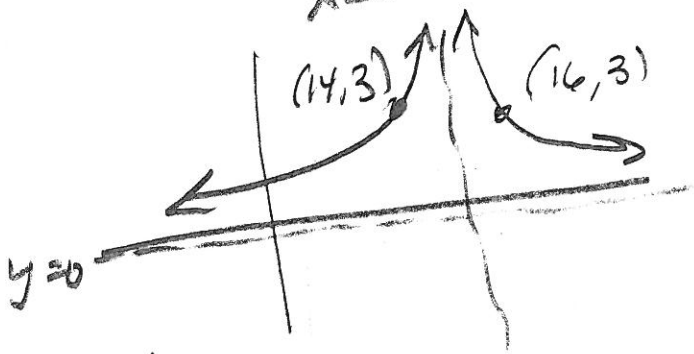

① $3f(x) = 3\left(\frac{1}{x^2}\right) = \frac{3}{x^2}$

$y \longmapsto 3y$



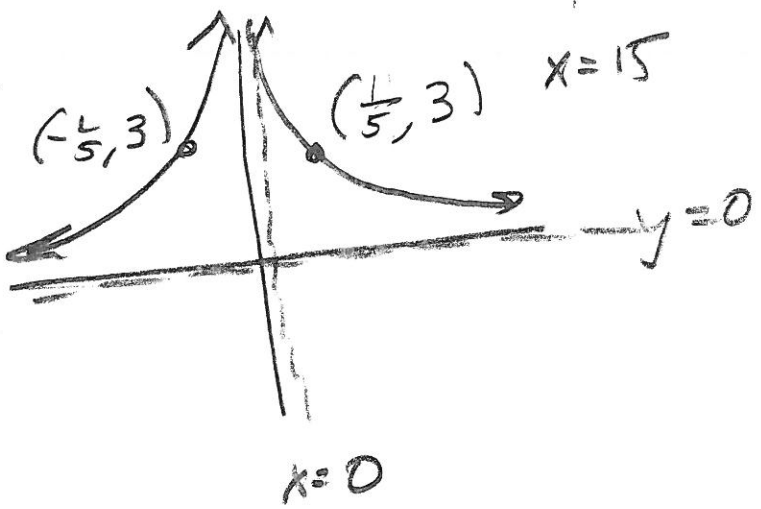

M1 ② $3f(x-15) = \frac{3}{(x-15)^2}$

$x \longmapsto x+15$




M2 $3f(5x) = \frac{3}{(5x)^2}$

$x \longmapsto \frac{1}{5}x$

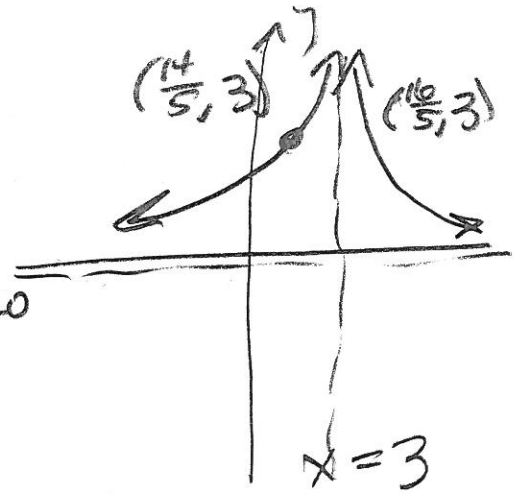


121 wp2

(1) cntd

(M1) $3f(5x-15) = \dfrac{3}{(5x-15)^2}$

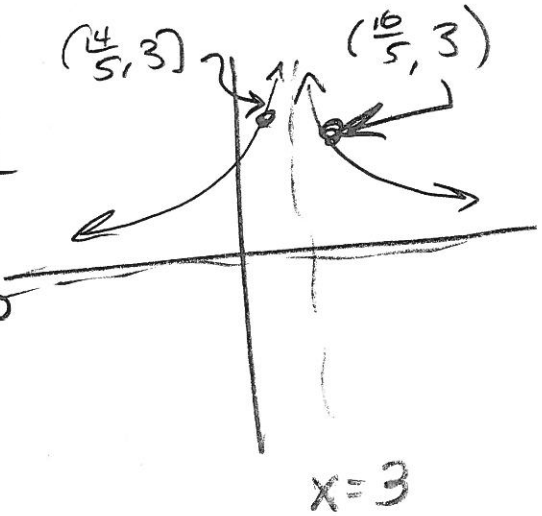
$x \longmapsto \frac{1}{5}x$




(M2) $3f(5(x-3))$

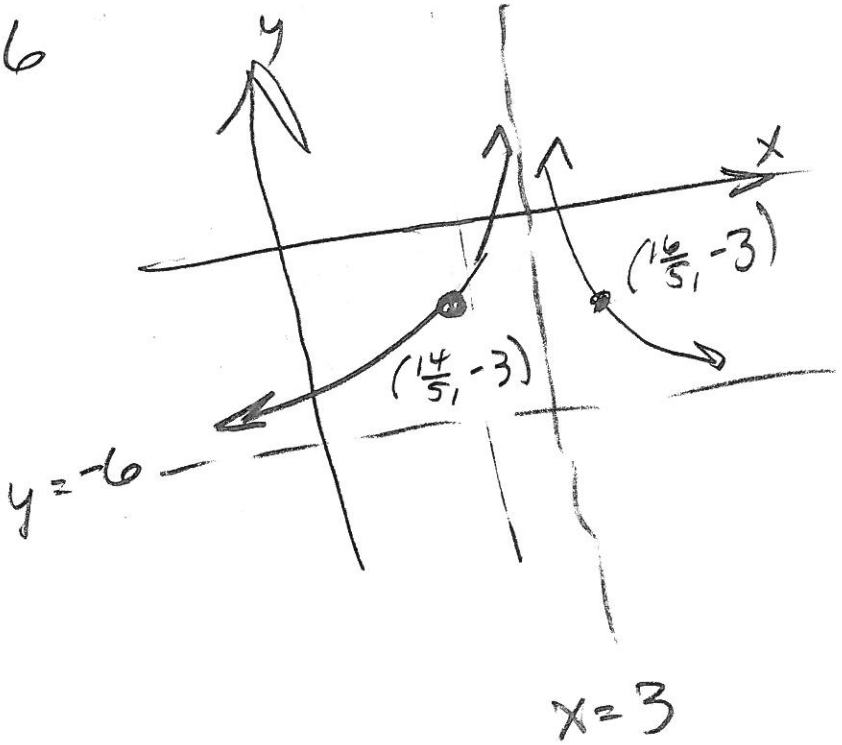
$x \longmapsto x+3 \qquad -\frac{1}{5}+3 = \frac{-1+15}{3} = \frac{14}{5}$

$\frac{1}{5}+\frac{15}{5} = \frac{16}{5}$




(4) $g(x) = 3f(5x-15)-6$

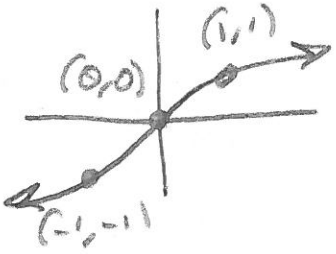
$y \longmapsto y-6$



121 WP #2

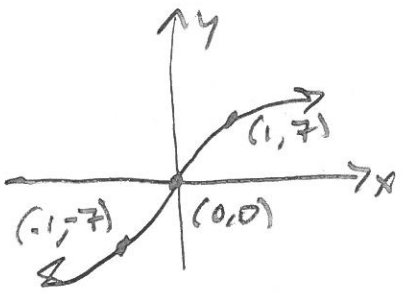
(3) $g(x) = 7(3x-21)^{\frac{1}{3}} + 13$

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



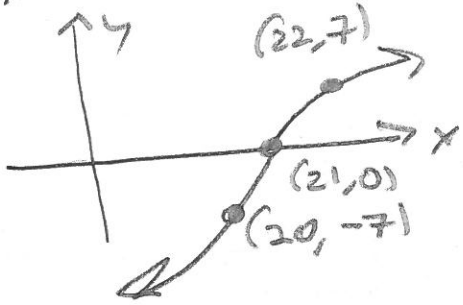

(1) $7f(x) = 7x^{\frac{1}{3}}$

$y \mapsto 7y$



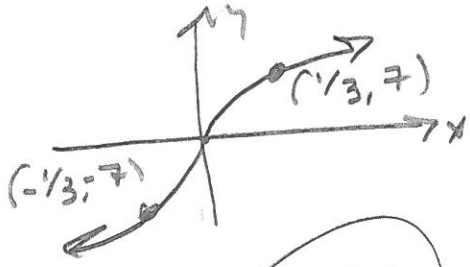

(2) M1 $7f(x-21)$ DELAY $= 7(x-21)^{\frac{1}{3}}$

$x \mapsto x+21$



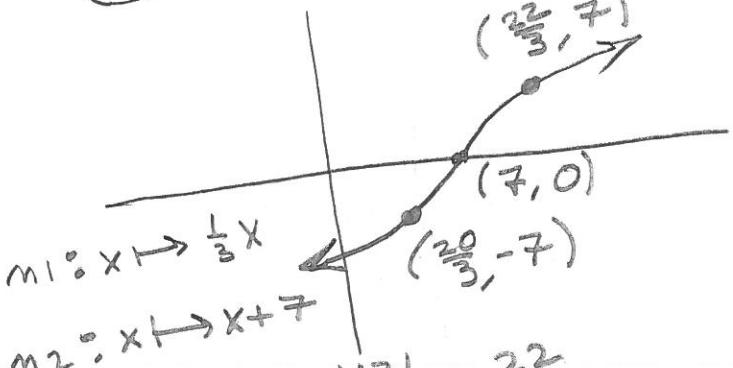

(2) M2 $7f(3x) = 7(3x)^{\frac{1}{3}}$

$x \mapsto \frac{1}{3}x$




(3) $7f(3x-21) = 7f(3(x-7))$

m1 m2




m1: $x \mapsto \frac{1}{3}x$

m2: $x \mapsto x+7$

m2: $\frac{1}{3}+7 = \frac{1+21}{3} = \frac{22}{3}$

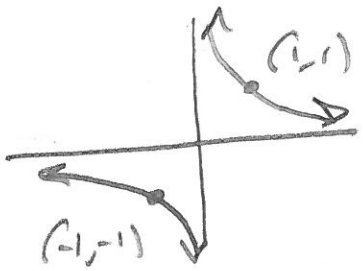
$\frac{1}{3}-7 = \frac{-1+21}{3} = \frac{20}{3}$

(4)

121 WP 2

(3) $g(x) = \frac{-3}{(5x-15)^3} - 7$

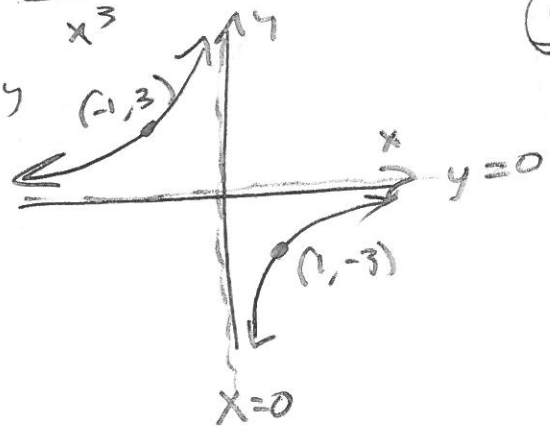
(0) $f(x) = \frac{1}{x^3}$




$\frac{1}{x^{2n+1}}$ shape $\frac{1}{x^{000}}$

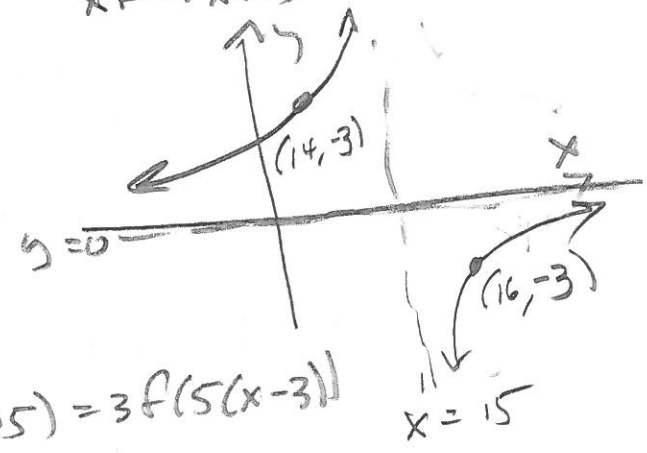
(1) $-3f(x) = \frac{-3}{x^3}$

$y \mapsto -3y$



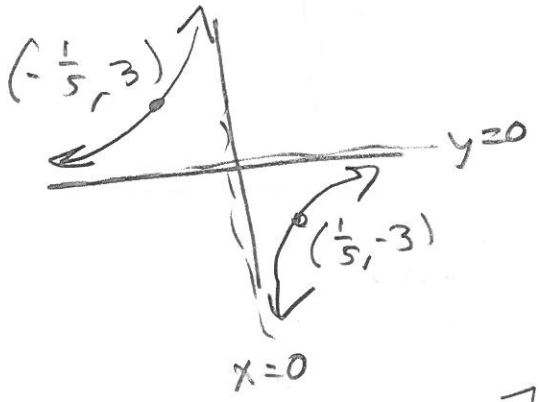

(2) (M1) $-3f(x-15) = \frac{-3}{(x-15)^3}$

$x \mapsto x+15$




(2) (M2) $-3f(5x)$

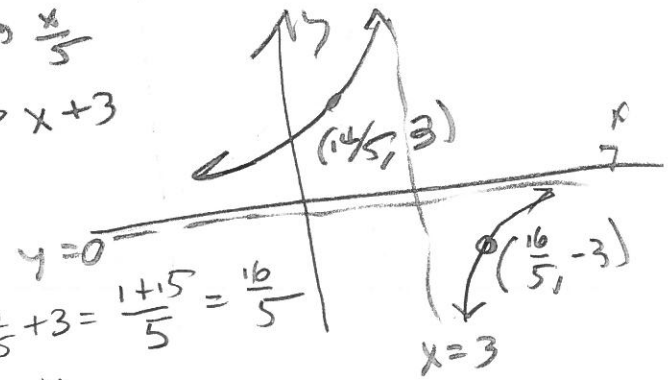
$x \mapsto \frac{1}{5}x$




(3) $3f(5x-15) = 3f(5(x-3))$

M1: $x \mapsto \frac{x}{5}$

M2 $x \mapsto x+3$

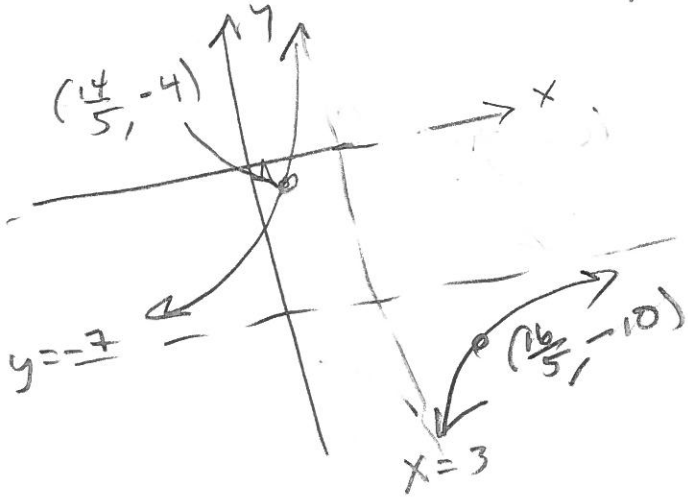



M2: $\frac{1}{5}+3 = \frac{1+15}{5} = \frac{16}{5}$

(4) $g(x)$ Down 7

$3f(5x-15) - 7$

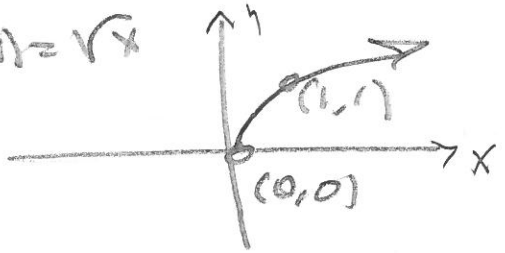
$y \mapsto y-7$



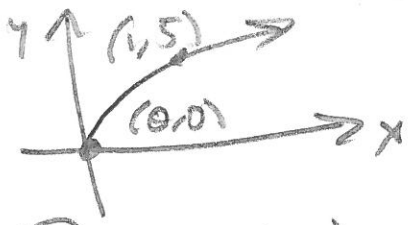
121 WP 2

(4) $g(x) = 5\sqrt{3x-12} - 11$

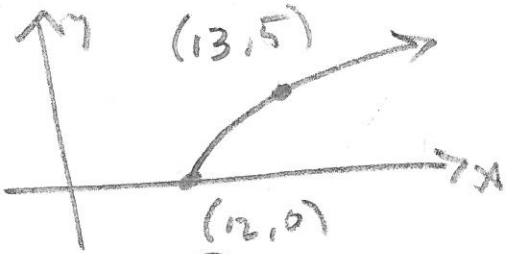
(0) $f(x) = \sqrt{x}$



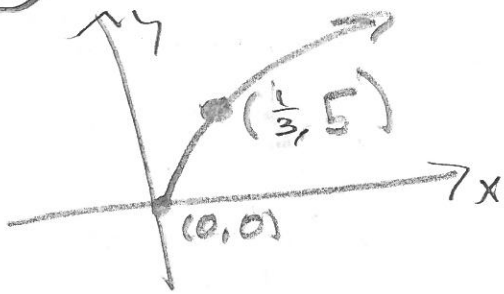

(1) $5f(x) = 5\sqrt{x}$




(2) (m1) $5f(x-12) = 5\sqrt{x-12}$

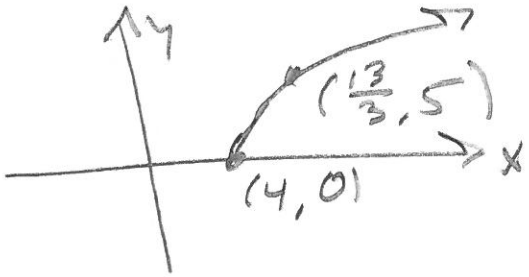



(m2) $5f(3x)$




(3) $5f(\overset{m1}{3x-12}) = 5f(\overset{m2}{3(x-4)})$

$x \mapsto \frac{1}{3}x$ $\quad$ $x \mapsto x+4$

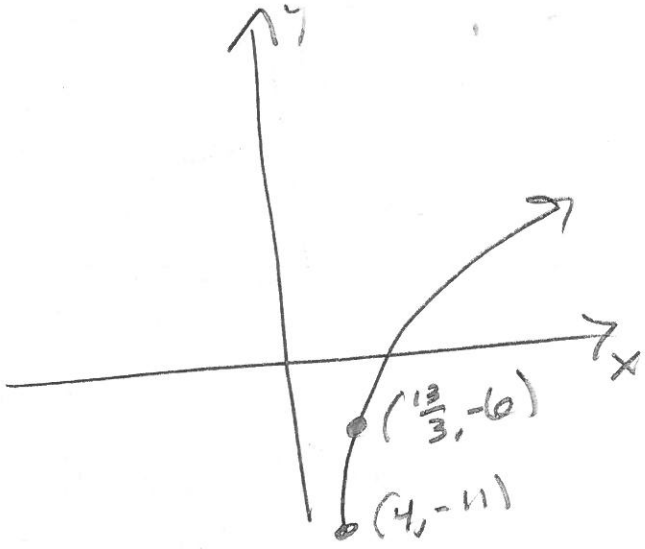



(4) $5f(3x-12) - 11$

$= g(x)$

$y \mapsto y - 11$

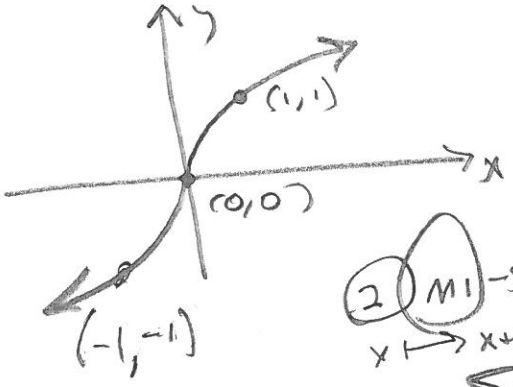
Down 11



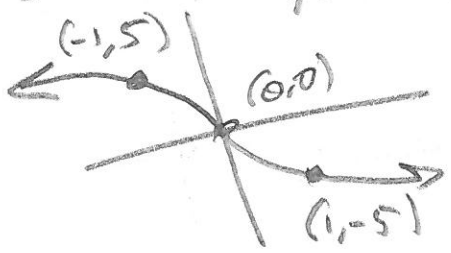
121 WP 2

(5) $g(x) = -5\sqrt[3]{3x-12} + 7$

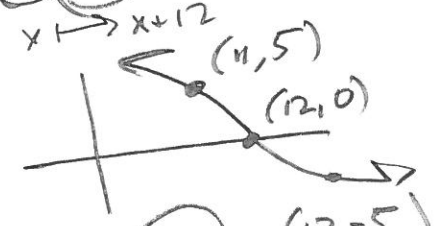
(0) $f(x) = \sqrt[3]{x} = x^{\frac{1}{3}}$



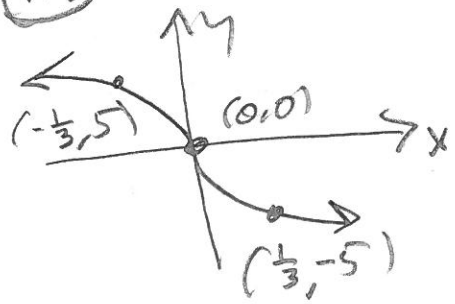

(1) $-5f(x)$ $y \mapsto -5y$



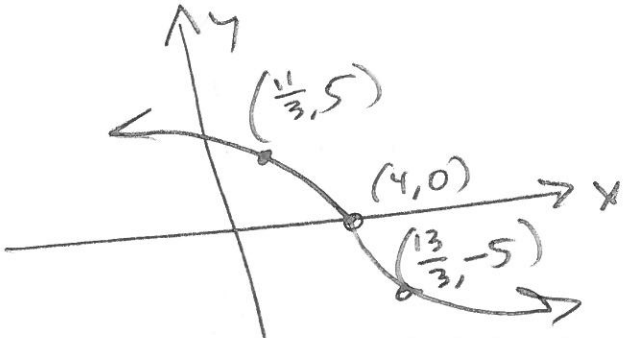

(2) M1 $-5f(x-12)$ $x \mapsto x+12$




(2) M2 $-5f(3x)$




(3) $-5f(3x-12) = -5f(3(x-4))$ $x \mapsto \frac{1}{3}x$ $x \mapsto x+4$

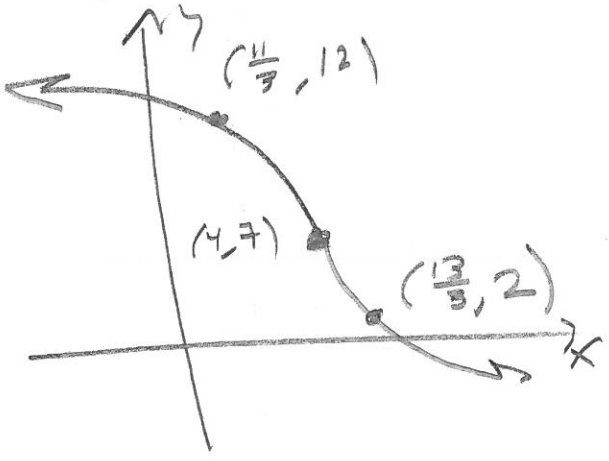



M2:

$-\frac{1}{3}+4 = \frac{-1+12}{3} = \frac{11}{3}$

$\frac{1}{3}+4 = \frac{1+12}{3} = \frac{13}{3}$

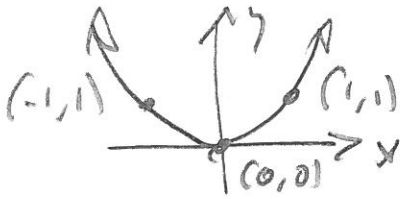
(4) $g(x) = -5f(3x-12)+7$ up 7 $y \mapsto y+7$



121 wp 2

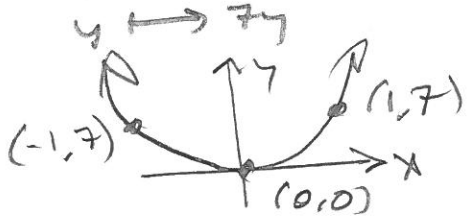
(6) $g(x) = 7(5x-40)^4 - 9$

(0) $f(x) = x^4$



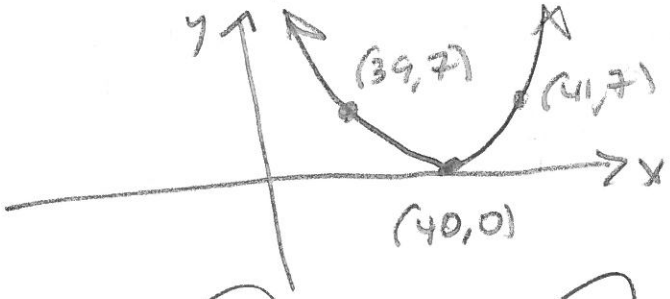

(1) $7f(x) = 7x^4$

$y \longmapsto 7y$

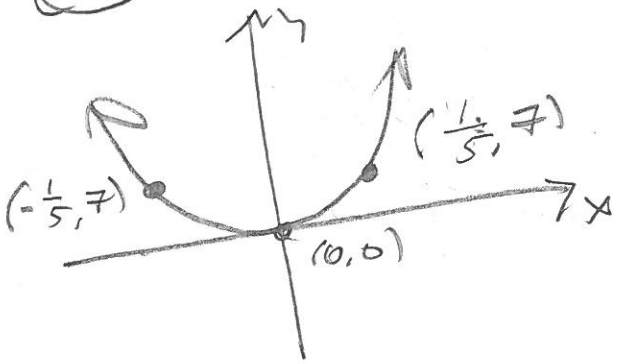



(2) (M1) $7f(x-40)$

$x \longmapsto x+40$

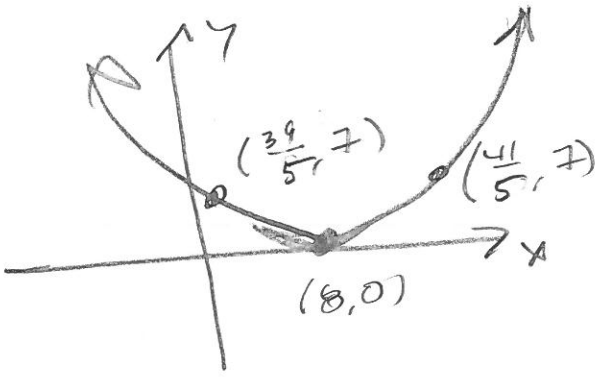



(M2) $7f(5x)$ $x \longmapsto \frac{1}{5}x$




(3) $7f(5x-40) = 7f(5(x-8))$

(M1) $x \longmapsto \frac{1}{5}x$ (M2) $x \longmapsto x+8$



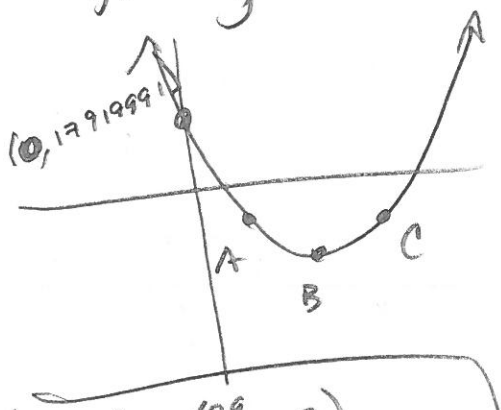

M2:

$-\frac{1}{5} + 8 \cdot \frac{5}{5} = \frac{-1+40}{5} = \frac{39}{5}$

$\frac{1}{5} + 8 = \frac{41}{5}$

(4) $7f(5x-40) - 9$

$y \longmapsto y-9$




$A = (\frac{39}{5}, -2)$

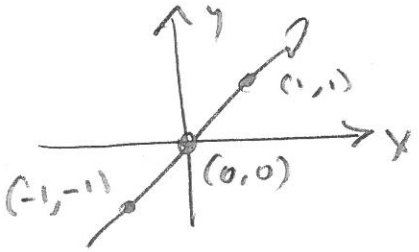
$B = (8, -9)$

$C = (\frac{41}{5}, -2)$

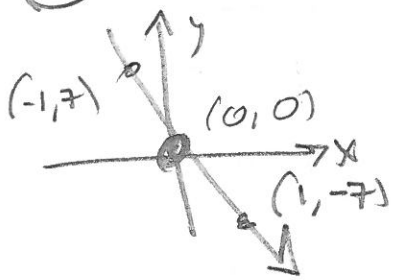
121 WP 2

(7) $g(x) = -7(x+4)+5$

(0) $f(x) = x$

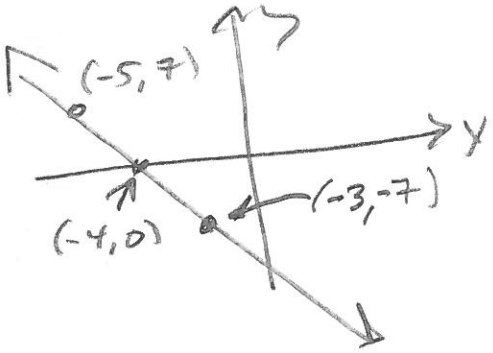



(1) $-7f(x) = -7x$



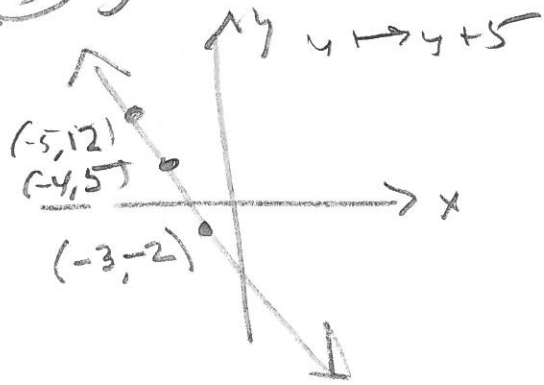

(2) $-7(x+4)$

$x \longmapsto x-4$



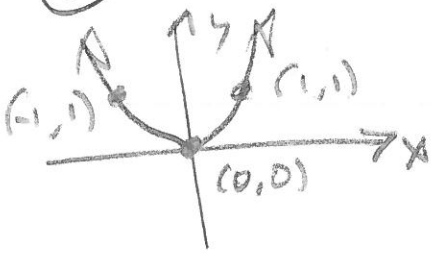

(3) $g(x) = -7(x+4)+5$

$y \longmapsto y+5$

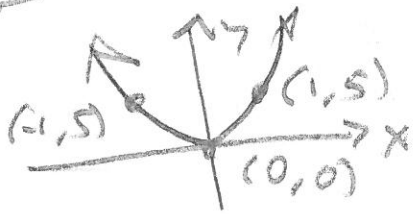



(8) $g(x) = 5(x+6)^2 - 8$

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

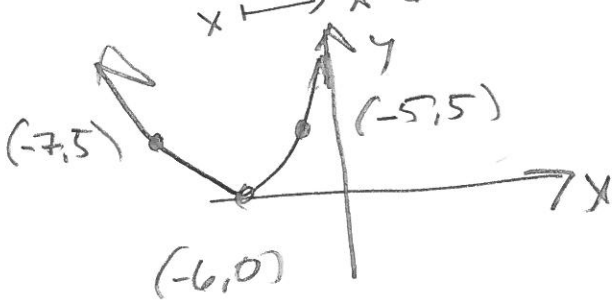



(1) $5f(x) = 5x^2$ $\quad y \longmapsto 5y$



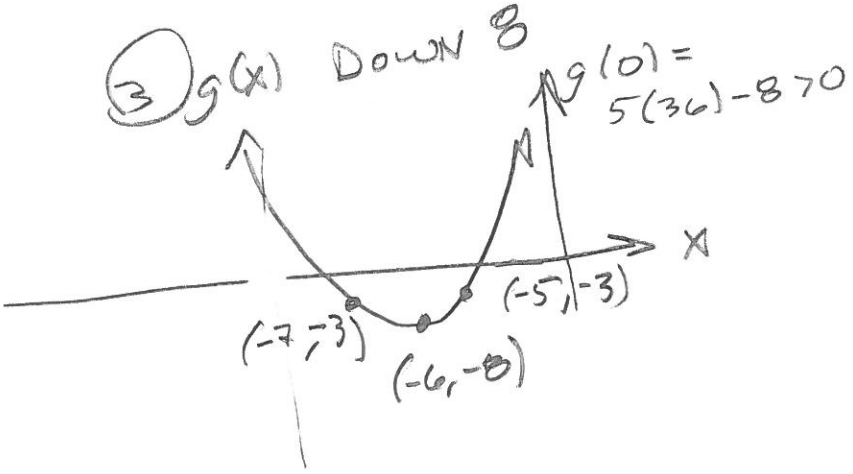

(2) $5(x+6)^2$

$x \longmapsto x-6$




(3) $g(x)$ Down 8

$g(0) = 5(36)-8 > 0$



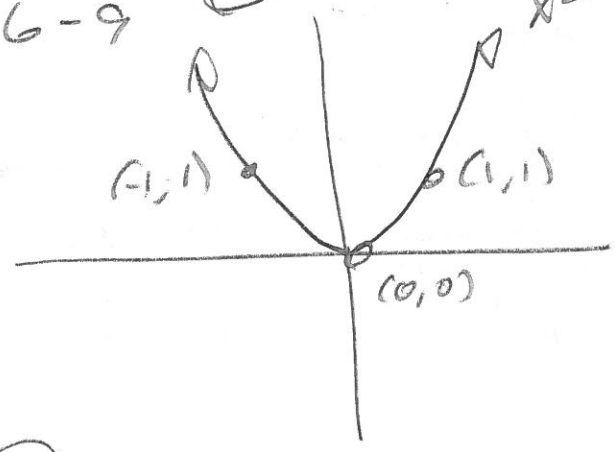
121 WP 2

(9) $g(x) = x^2 + 8x - 9$

$= x^2 + 8x + 4^2 - 16 - 9$

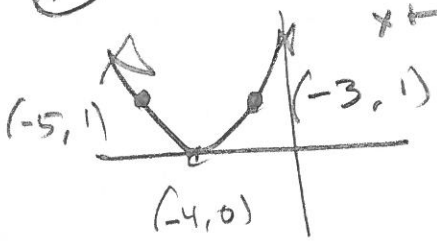
$= (x+4)^2 - 25$

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



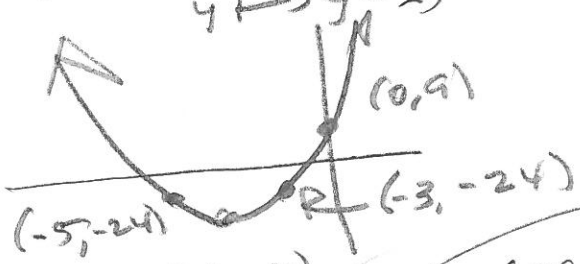

(1) $f(x+4) = (x+4)^2$

$x \mapsto x - 4$




(2) $f(x+4) - 25$

$y \mapsto y - 25$




(10) $g(x) = 7x^2 - 6x - 71$

$= 7(x^2 - \frac{6}{7}x \quad ) - 71$

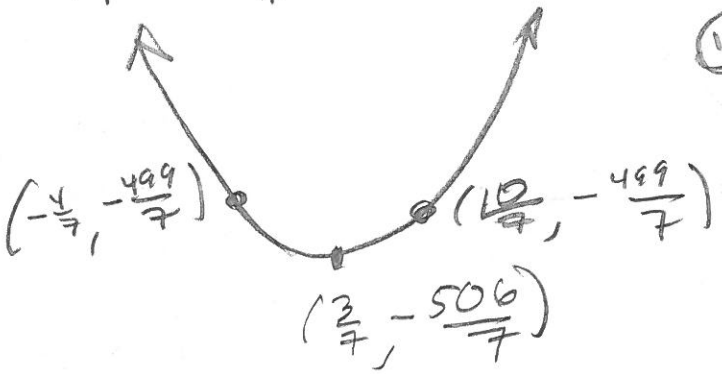
$= 7(x^2 - \frac{6}{7}x + (\frac{3}{7})^2) - 71 - 7(\frac{9}{49})$

$= 7(x - \frac{3}{7})^2 - \frac{506}{7}$

SCRATCH:

$-\frac{71}{1} \cdot \frac{7}{7} - \frac{9}{7}$

$= -\frac{506}{7}$




(0) 


$1 \mapsto \frac{7+3}{7}$

(1) $7x^2$ (2) $7(x - \frac{3}{7})^2$

(3) $7(x - \frac{3}{7})^2 - \frac{506}{7}$

$\frac{7 - 506}{7} = \frac{-499}{7}$

$\frac{-7+3}{7} = -\frac{4}{7}$

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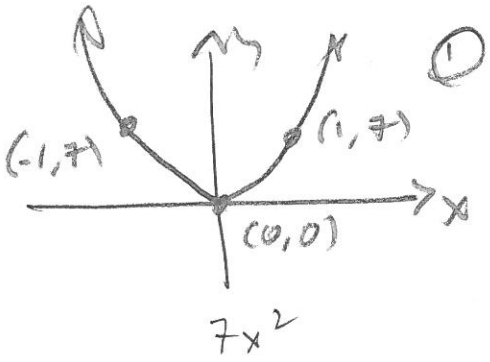
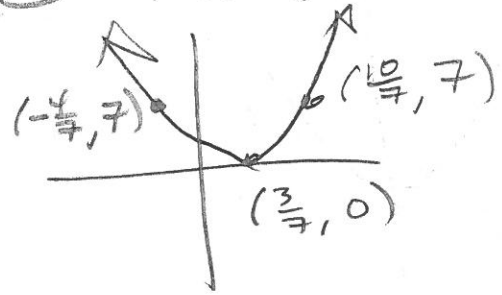
(10) $7\left(x-\frac{3}{7}\right)^2-\frac{506}{7}$




(1)

(2) $7\left(x-\frac{3}{7}\right)^2$ $x \longmapsto x+\frac{3}{7}$




(3) $7\left(x-\frac{3}{7}\right)^2-\frac{506}{7}$ See previous Page.