

Let $x = \#$ of hours John works

$$\text{Then } \frac{1}{12}x + \frac{1}{16}(x+2) = 1$$

Let $x = \#$ of hours Bob works

$$\text{Then } \frac{1}{12}(x-2) + \frac{1}{16}x = 1$$

\Rightarrow John works 6
Bob works 8

manipulating

$$f(x) = x^2 - 8x - 5$$

$$= x^2 - 8x + 4^2 - 16 - 5$$

$$= (x-4)^2 - 21$$

$$(h, k) = (4, -21)$$

Solving

$$x^2 - 8x - 5 = 0$$

$$x^2 - 8x = 5$$

$$x^2 - 8x + 4^2 = 5 + 16$$

$$(x-4)^2 = 21$$

$$x-4 = \pm\sqrt{21}$$

$$x = 4 \pm \sqrt{21}$$

$$f(x) = 5x^2 + 10x - 19$$

$$= 5(x^2 + 2x) - 19$$

$$= 5(x^2 + 2x + 1^2) - 19 - 5$$

$$= 5(x+1)^2 - 24$$

$$(h, k) = (-1, -24)$$

$$\begin{array}{r} 2 \overline{) 24} \\ \underline{2} \\ 0 \\ 2 \overline{) 12} \\ \underline{2} \\ 0 \\ 2 \overline{) 6} \\ \underline{2} \\ 0 \end{array}$$

$$5x^2 + 10x - 19 = 0$$

$$5(x^2 + 2x) = 19$$

$$5(x^2 + 2x + 1^2) = 19 + 5$$

$$5(x+1)^2 = 24$$

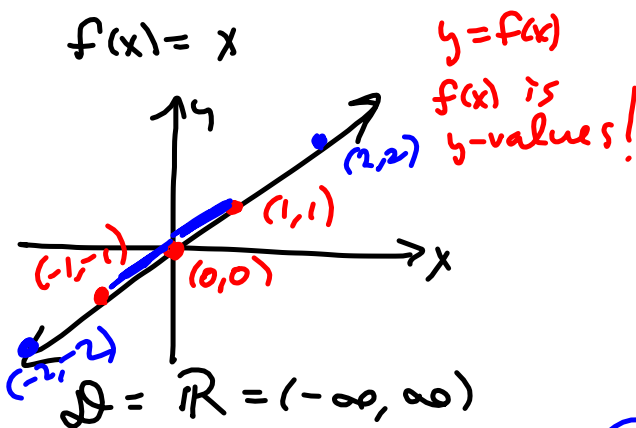
$$(x+1)^2 = \frac{24}{5}$$

$$x+1 = \pm\sqrt{\frac{24}{5}}$$

$$x = -1 \pm \frac{2\sqrt{6}}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}}$$

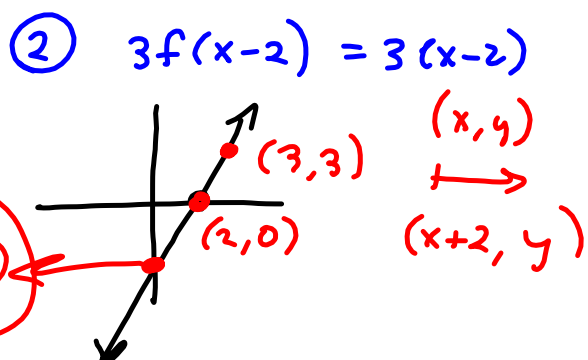
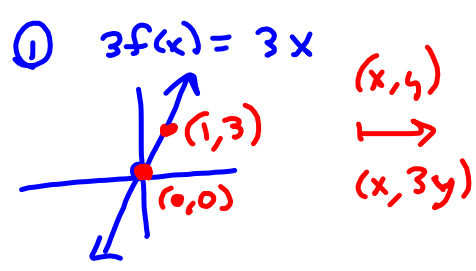
$$= -1 \pm \frac{2\sqrt{6}\sqrt{5}}{5}$$

$$= -1 \pm \frac{2\sqrt{30}}{5}$$

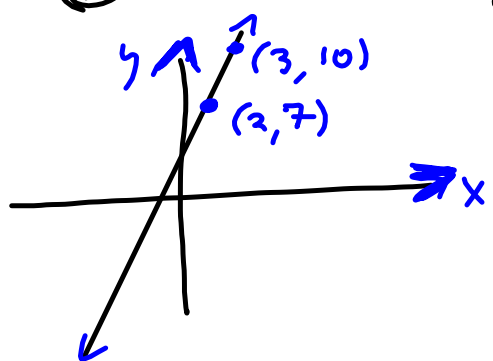


$D = \mathbb{R} = (-\infty, \infty)$
 $R = (-\infty, \infty)$
 Inc: $(-\infty, \infty)$
 Dec: \emptyset
 Symmetry: \emptyset
 thru origin (ODD)

Goal:
 $g(x) = 3(x-2) + 7$



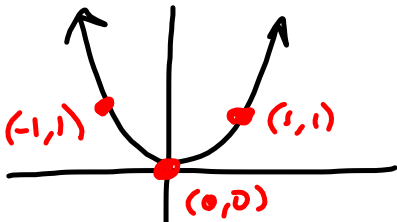
③ $3f(x-2) + 7 = g(x)$



$f(x) = x^2$

$(-1)(-1)$

x^4, x^6, x^8, x^{2n}



x^2

$R = \{y \mid y = f(x) \text{ for some } x \in D\}$

$D = \mathbb{R} = (-\infty, \infty)$

$x = 0 \in D$

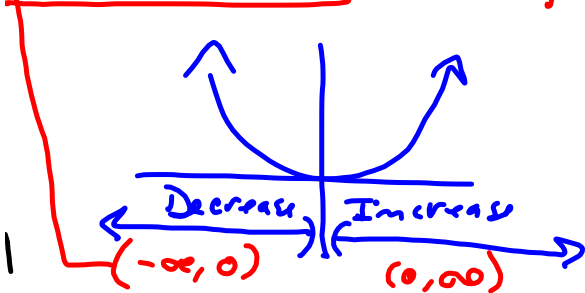
$R = [0, \infty)$

$x^2 = 0^2 \in R$

Inc: $(0, \infty)$

Report x-values where y is increasing.

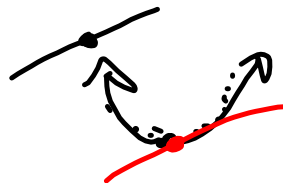
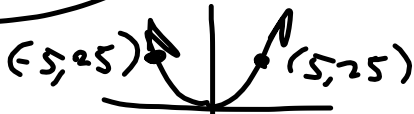
Dec: $(-\infty, 0)$



~~Inc: $[0, \infty)$
Dec: $(-\infty, 0]$~~

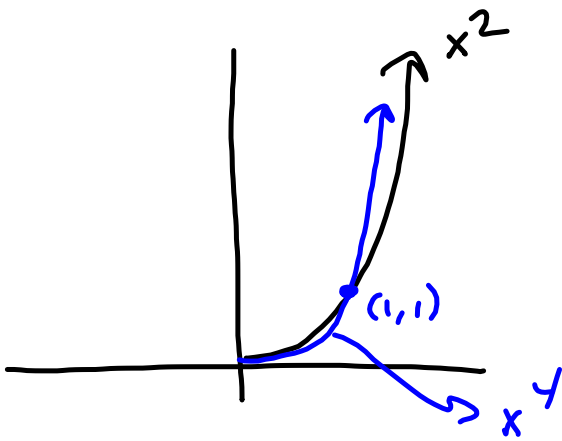
Symmetry:

y-axis



Even Func.

$25 = f(-5) = f(-x) = f(x) = f(5) = 25$



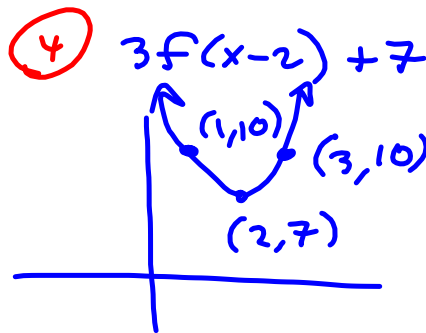
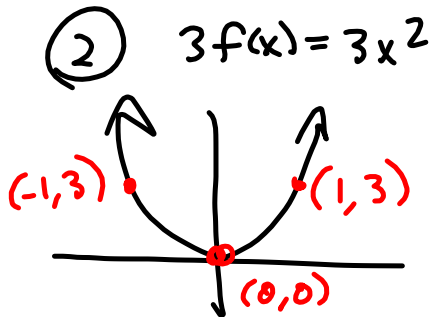
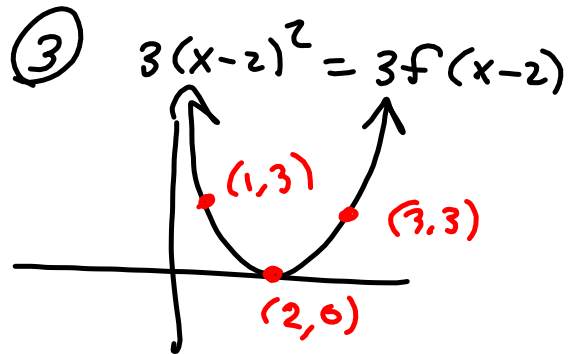
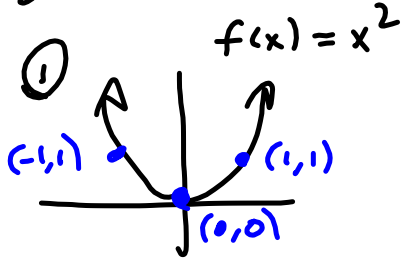
$$\left(\frac{1}{2}\right)^2 = \frac{1}{4} \quad 2^2 = 4$$

$$\left(\frac{1}{2}\right)^4 = \frac{1}{16} \quad 2^4 = 16$$



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

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



GRADE
SUMMARIES
Next time.

* Some students did Excellent

④ Some did less well than the work prior to test.

Some sandbagged homework & Aced test
2

Amount Pure Nitrate = Amount Pure Nitrate

Let x = amount of 20% nitrate solution (liters)

conc.	vol	NO_3
20%	x	$.2x$
50%	50L	$.5(50) = 25$
34%	$x+50$ y	$.34(x+50)$ $.34y$

$y = x + 50$

$$.2x + .5(50) = .34(x+50)$$

$$.2x + 25 = .34x + 17$$

$$-.34x \quad = -.34x$$

$$-.14x + 25 = 17$$

$$-25 = -25$$

$$-.14x = -8$$

$$x = \frac{-8}{-.14} \approx 57.14 \text{ L of } 20\%$$