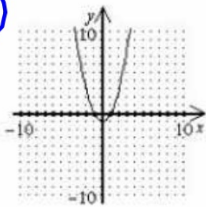


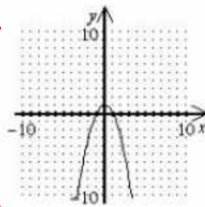
## AM: Graph Quadratic Functions

1. Graph:  $y = x^2 - 1$

[A]



X

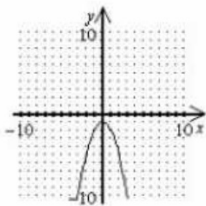


$$x^2 - 1$$

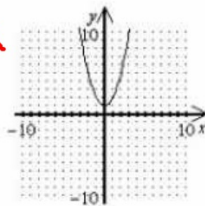
$$a = 1 \quad b = 0 \quad c = -1$$

$$h = \frac{-b}{2a} = \frac{-0}{2(1)}$$

[C]



X



$$k = c - ah^2 = -1 - 1(0)^2 = -1$$

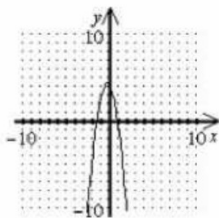
LO: The axis of symmetry for the quadratic function is  $x = -b/(2a) = 0$ .  
 The vertex for the parabola is  $(h, k)$  where  $h = 0$ , and  $k = f(h) = -1$ .  
 The leading coefficient,  $a = 1$ , is the same in both forms of the quadratic function, therefore the vertex form is  $y = 1(x - 0)^2 - 1$ .

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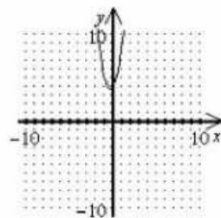
## AM: Graph Quadratic Functions

2. Graph:  $y = 3x^2 + 2x - 4$

~~[A]~~



~~[B]~~

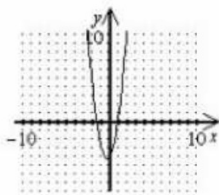


$$3x^2 + 2x - 4$$

$$a = 3 \quad b = 2 \quad c = -4$$

$$h = \frac{-2}{2(3)} = \frac{-2}{6} = -\frac{1}{3}$$

[C]



[D] none of these

|

$$k = -4 - 3\left(-\frac{1}{3}\right)^2$$

$$k = -4 - 3\left(\frac{1}{9}\right) = -4 - \frac{1}{3}$$

LO: The axis of symmetry for the quadratic function is  $x = -b/(2a) = -\frac{1}{3}$   
 The vertex for the parabola is  $(h, k)$  where  $h = -\frac{1}{3}$ , and  $k = f(h) = -4\frac{1}{3}$   
 The leading coefficient,  $a = 3$ , is the same in both forms of the quadratic function, therefore the vertex form is  $y = 3\left(x + \frac{1}{3}\right)^2 - 4\frac{1}{3}$ .

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$$\left(\frac{3}{4}\right)^2 = \frac{3^2}{4^2} = \frac{9}{16}$$

$$\left(\frac{x}{y}\right)^m = \frac{x^m}{y^m}$$

### AM: Solve a proportion that generates a linear or quadratic equation

3.  $\frac{3y}{-18} = \frac{-6}{y-9}$

[A]  $y = -12$  or  $y = 3$

[B]  $y = 12$  or  $y = 3$

[C]  $y = 12$  or  $y = -3$

[D]  $y = -12$  or  $y = -3$

$$\cancel{(-18)}(y-9) \frac{3y}{\cancel{-18}} = \frac{-6}{\cancel{y-9}} \cancel{(-18)}(y-9)$$

$$3y^2 - 27y = 108$$
$$\quad \quad \quad -108 \quad -108$$

$$3y^2 - 27y - 108 = 0$$
$$a=3 \quad b=-27 \quad c=-108$$

## AM: Solve a radical equation that leads to a quadratic equation

Solve:

1.  $\sqrt{6y} = -3y$

- [A]  $y = 0$     [B]  $y = -2$  or  $y = 2$     [C]  $y = 0$  or  $y = \frac{2}{3}$     [D] no real solution

$$y_1 = \sqrt{6x}$$

$$y_2 = -3x$$

$$(\sqrt{6y})^2 = (-3y)^2$$

$$-3y \cdot -3y$$

$$\begin{matrix} 6y & = & 9y^2 \\ -6y & & -6y \end{matrix}$$

$$0 = 9y^2 - 6y \longrightarrow 0 = 3y(3y - 2)$$

$$a=9 \quad b=-6 \quad c=0 \quad 3y=0$$

$$3y-2=0$$

$$\begin{matrix} +2 & +2 \\ 3y & = 2 \\ y & = \frac{2}{3} \end{matrix}$$

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$$y=0$$

$$\sqrt{6y} = -3y$$

$$y=0$$

$$\sqrt{6 \cdot 0} = -3(0)$$

$$0 = 0$$

$$y = \frac{2}{3}$$

extraneous  
solution

$$\sqrt{6\left(\frac{2}{3}\right)} = -3\left(\frac{2}{3}\right)$$

$$2 = -2$$