

Name: _____

Show work needed to justify your answer.

Date: _____

HW: # 10: Math IBSL - Standard 10 - Graphing Quadratic Functions

5 points

1. Write the following equations in factored (intercept) form

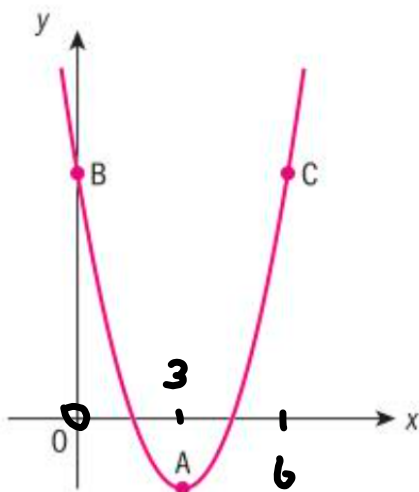
a $f(x) = x^2 + 7x - 18$

$$f(x) = (x+9)(x-2)$$

d $f(x) = -4x^2 + 18x - 8$

$$f(x) = -2(2x^2 - 9x + 4)$$

$$f(x) = -2(2x-1)(x-4)$$

5 Let $f(x) = (x-3)^2 - 2$. Part of the graph of $y = f(x)$ is shown.

- a The vertex of the graph of $y = f(x)$ is A.
- Write down the coordinates of A.
 - Write down the equation of the axis of symmetry for the graph of $y = f(x)$.
- b Find the equation for the function f in the form $f(x) = ax^2 + bx + c$.
- c The coordinates of B are $(0, q)$. Write down the value of q .
- e The coordinates of C are (p, q) . Find the value of p .

a(i) vertex: $(3, -2)$

a(ii) A of S: $x = 3$

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

$$f(x) = x^2 - 6x + 9 - 2$$

$$f(x) = x^2 - 6x + 7$$

c) $q = 7$

d) ?

e) $p = 6$

6 Let $f(x) = x^2 - 2x - 3$ and $g(x) = x - 2$.

a Let $h(x) = (f \circ g)(x)$. Show that $h(x) = x^2 - 6x + 5$.

b Find the equation of the axis of symmetry for the graph of h .

c Find the coordinates of the vertex of the graph of h .

d Find an equation for h in the form $h(x) = (x - p)(x - q)$, where p and q are integers.

e Sketch a graph of $y = -h(x)$, for $1 \leq x \leq 5$. - Reflect over x-axis

$$\begin{aligned} \text{a) } f(g(x)) &= f(x-2) = (x-2)^2 - 2(x-2) - 3 \\ &\downarrow = x^2 - 4x + 4 - 2x + 4 - 3 \\ &\boxed{h(x) = x^2 - 6x + 5} \end{aligned}$$

$$\text{(b) } x = -\frac{b}{2a} \rightarrow x = \frac{6}{2} \rightarrow \boxed{x = 3}$$

$$\text{(c) } h(3) = 9 - 18 + 5 \rightarrow \text{vertex: } \boxed{(3, -4)}$$

$$\text{(d) } \boxed{h(x) = (x-5)(x-1)}$$

(e)

