ASSESSMENT#4-Chapter 2.1-2.3
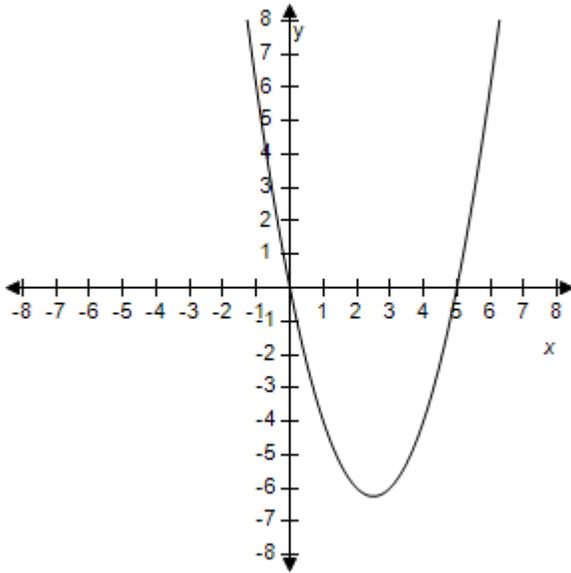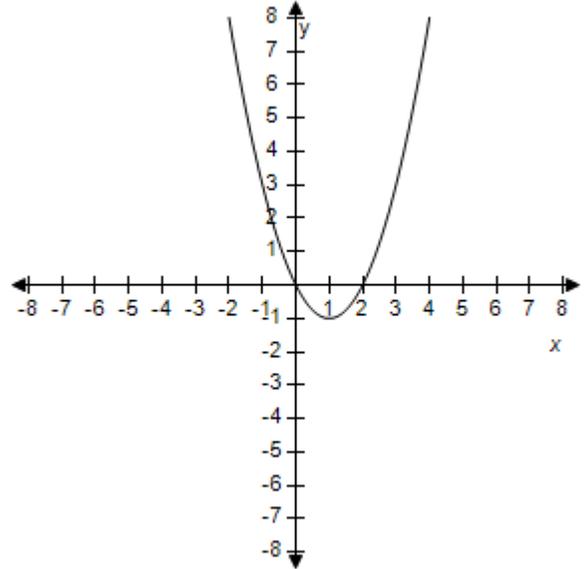
(1) Select the graph of the quadratic function.

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

a.

b.

c.

e.

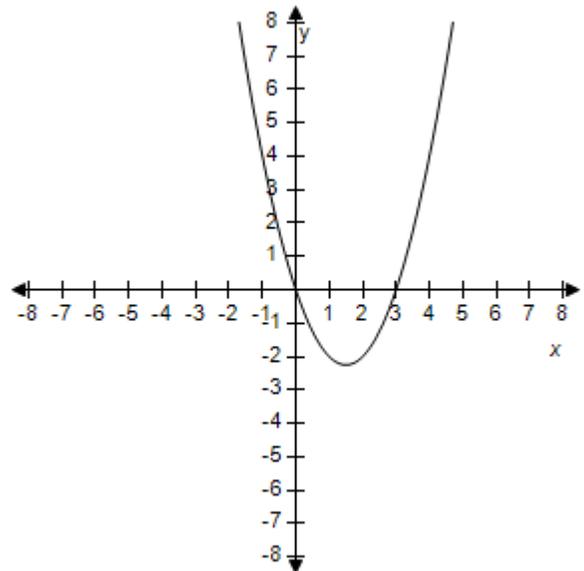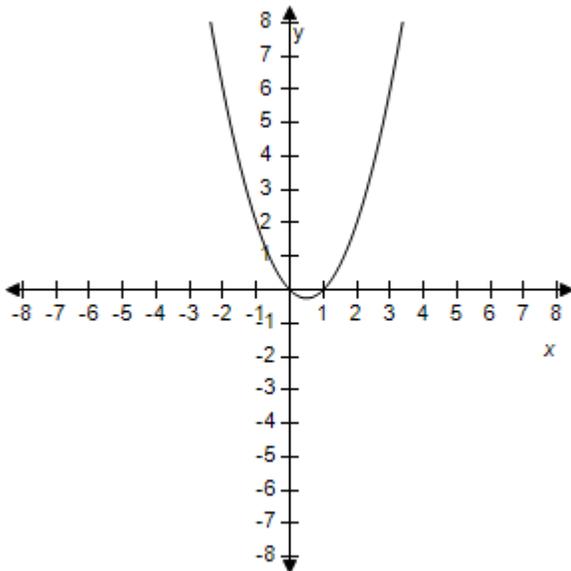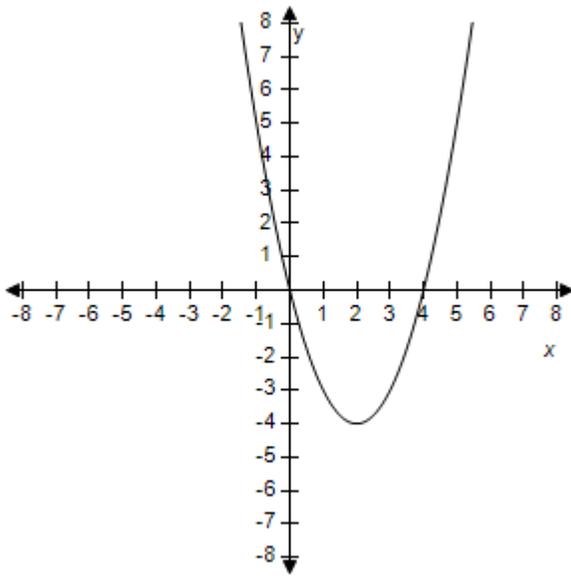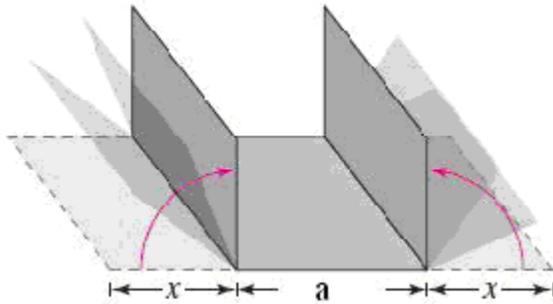(2) A roofing contractor is fabricating gutters from 10-inch aluminum sheeting. The contractor plans to use an aluminum siding folding press to create the gutter by creasing equal lengths for the sidewalls (see the figure).

Here, $a = 10 - 2x$, where x represents the height of the sidewall of the gutter.
Write a function A that represents the cross-sectional area of the gutter.

    a. $A = -2x^2 + 10x$

    b. $A = 10x^2 - 2x$

    c. $A = -10x - 2x^2$

    d. $A = 2x^2 - 10x$

    e. $A = 2x^2 + 10x$

(3) Use long division to divide.

$(x^4 + 7x^3 + 10x^2 - x - 2) \div (x + 2)$

(4) Differentiate the following functions using the power rule:

a. $f(x) = (2x^5)^2$

b. $f(x) = x^2 + 4x + 2$

c. $f(x) = (x + 4)^2$

d. $f(x) = 2\sqrt{96x^3}$

(2)   Differentiate the following functions using the product rule:

a. $g(x) = (2x - 3)(1 - 5x)$

b. $y = (3x - 4)(x^3 + 5)$

c. $\sqrt{t}(1 - t^2)$

d. $g(x) = \sqrt{s}(s^3 + 8)$

(3)   Differentiate the following functions using the quotient rule:

     a. $f(x) = \dfrac{x}{(x-5)}$

     b. $g(t) = \dfrac{(3t^2-1)}{(2t+5)}$

c. $h(x) = \frac{\sqrt{x}}{x^3+1}$

d. $f(x) = \frac{x^2}{2\sqrt{x}+1}$

(4)   Differentiate the following functions using the chain rule:

a. $y = (2x - 7)^3$

b. $y = 5(2 - x^3)^4$

c. $y = \sqrt{4 - 3x^2}$

d. $f(x) = \dfrac{1}{\sqrt{x^2 - 2}}$

(5)   Find the first derivative (i.e. $\frac{dy}{dx}$) of each equation by implicit differentiation:

a. $x^2 - y^2 = 25$

b. $2x^3 + 3y^3 = 64$

c. $x^2y + y^2x = -2$

d. $x^{\frac{1}{2}}y^{\frac{1}{2}} = x^2y + 1$