

Quadratics in Standard Form - Sketching & Properties

Sketch the graph of each function and list the properties (domain, range, variation & signs)

1) $f(x) = -(x - 3)^2 + 2$

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

3) $f(x) = -(x + 2)^2 + 2$

4) $f(x) = -(x - 4)^2 + 3$

$$5) f(x) = -2(x + 3)^2 - 3$$

$$6) f(x) = (x - 3)^2 + 1$$

$$7) f(x) = (x - 2)^2 + 1$$

$$8) f(x) = -2(x + 3)^2 + 1$$

$$9) f(x) = (x + 2)^2 + 3$$

$$10) f(x) = (x - 4)^2 - 4$$

$$11) f(x) = -2(x + 4)^2 + 2$$

$$12) f(x) = -(x + 2)^2 - 3$$

$$13) f(x) = -(x - 1)^2 + 3$$

$$14) f(x) = -(x - 3)^2 + 4$$

$$15) f(x) = (x - 1)^2 + 4$$

$$16) f(x) = -3(x + 4)^2 + 1$$

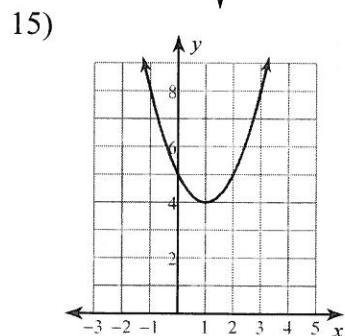
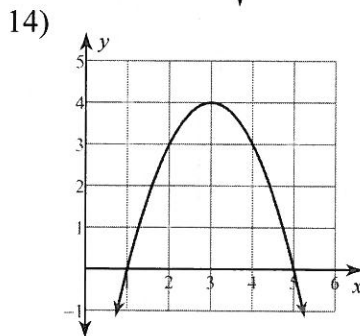
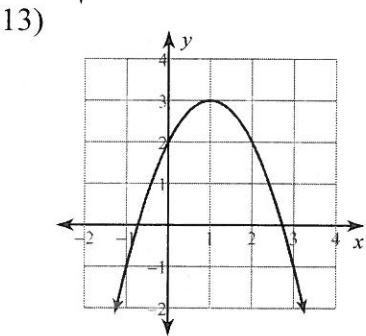
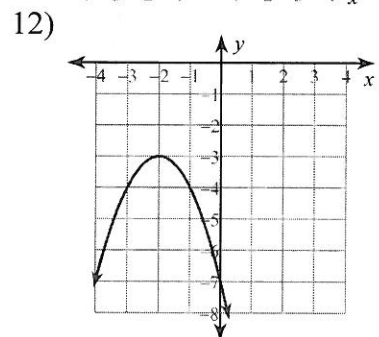
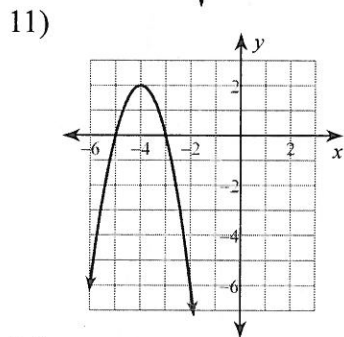
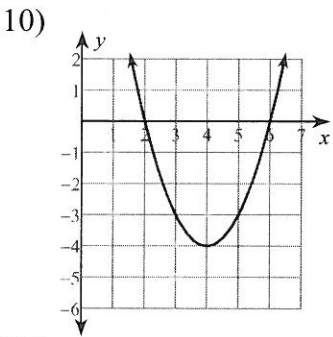
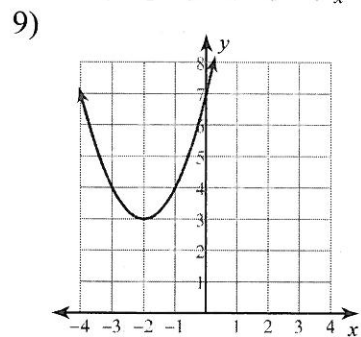
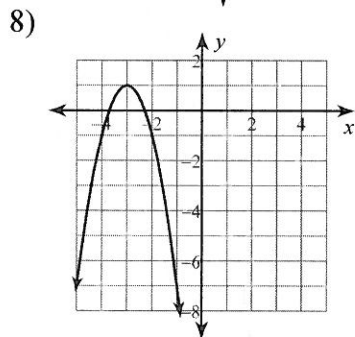
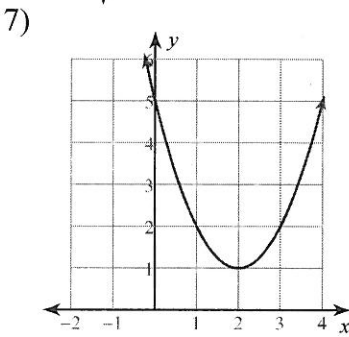
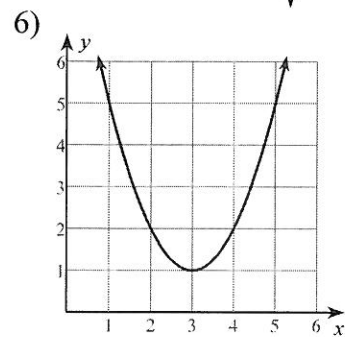
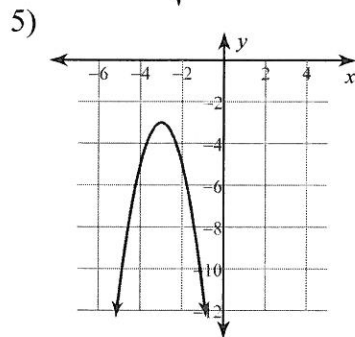
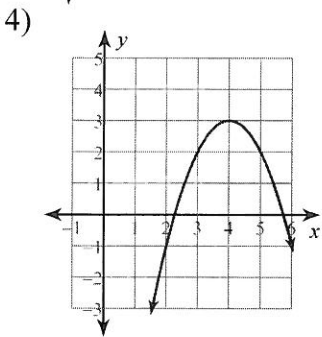
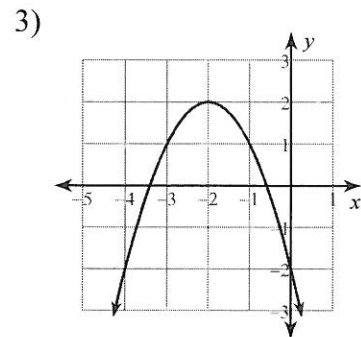
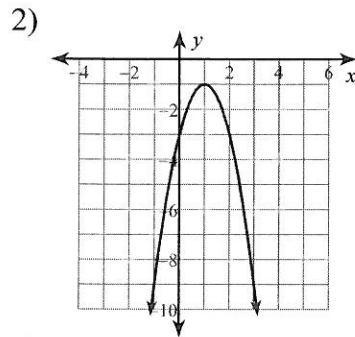
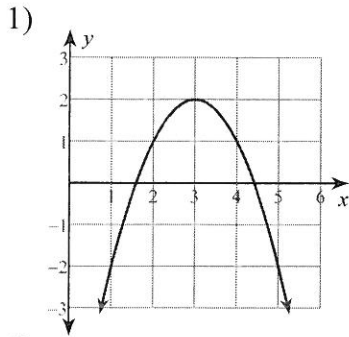
$$17) f(x) = -\frac{1}{2}(x-4)^2 + 2$$

$$18) f(x) = 2(x-2)^2 - 1$$

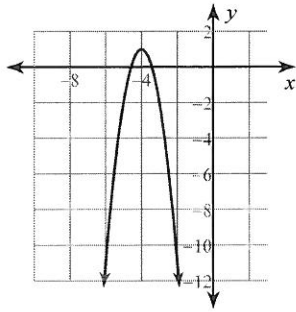
$$19) f(x) = -(x-2)^2 + 3$$

$$20) f(x) = 2(x-4)^2 + 3$$

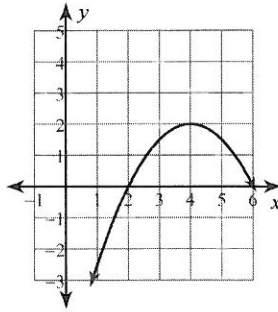
Answers to Quadratics in Standard Form - Sketching & Properties (ID: 1)



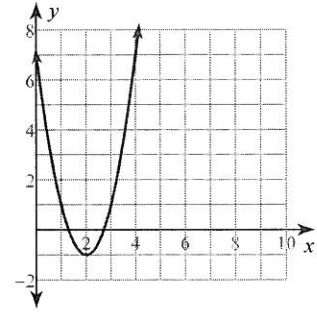
16)



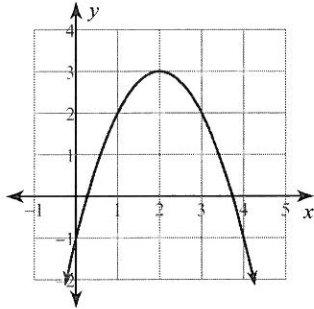
17)



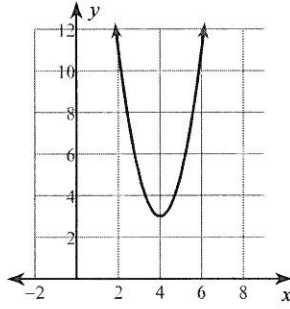
18)



19)



20)



$$1) \text{ Dom: } \mathbb{R} \\ \text{Ran: }]-\infty, 2]$$

$$\text{Inc: }]-\infty, 3]$$

$$\text{Dec: } [3, \infty[$$

$$\text{Pos: } [2-\sqrt{2}, 2+\sqrt{2}]$$

$$\text{Neg: }]-\infty, 2-\sqrt{2}] \cup [2+\sqrt{2}, \infty[$$

$$2) \text{ Dom: } \mathbb{R} \\ \text{Ran: }]-\infty, -1]$$

$$\text{Inc: }]-\infty, 1]$$

$$\text{Dec: } [1, \infty[$$

$$\text{Pos: } \emptyset$$

$$\text{Neg: } \mathbb{R}$$

$$3) \text{ Dom: } \mathbb{R}$$

$$\text{Ran: }]-\infty, 2]$$

$$\text{Inc: }]-\infty, -2]$$

$$\text{Dec: } [-2, \infty[$$

$$\text{Pos: } [-2-\sqrt{2}, -2+\sqrt{2}]$$

$$\text{Neg: }]-\infty, -2-\sqrt{2}] \cup [-2+\sqrt{2}, \infty[$$

$$4) \text{ Dom: } \mathbb{R}$$

$$\text{Ran: }]-\infty, 3]$$

$$\text{Inc: }]-\infty, 4]$$

$$\text{Dec: } [4, \infty[$$

$$\text{Pos: } [4-\sqrt{3}, 4+\sqrt{3}]$$

$$\text{Neg: }]-\infty, 4-\sqrt{3}] \cup [4+\sqrt{3}, \infty[$$

$$5) \text{ Dom: } \mathbb{R} \quad \text{Ran: }]-\infty, -3] \\ \text{Inc: }]-\infty, -3] \quad \text{Dec: } [-3, \infty[\\ \text{Pos: } \emptyset \quad \text{Neg: } \mathbb{R}$$

$$6) \text{ Dom: } \mathbb{R} \quad \text{Ran: } [1, \infty[\\ \text{Inc: } [3, \infty[\quad \text{Dec: }]-\infty, 3] \\ \text{Pos: } \mathbb{R} \quad \text{Neg: } \emptyset$$

$$7) \text{ Dom: } \mathbb{R} \quad \text{Ran: } [1, \infty[\\ \text{Inc: } [2, \infty[\quad \text{Dec: }]-\infty, 2] \\ \text{Pos: } \mathbb{R} \quad \text{Neg: } \emptyset$$

$$8) \text{ Dom: } \mathbb{R} \quad \text{Ran: }]-\infty, 1] \\ \text{Inc: }]-\infty, -3] \quad \text{Dec: } [-3, \infty[\\ \text{Pos: } \left[-\frac{6-\sqrt{2}}{2}, -\frac{6+\sqrt{2}}{2}\right] \\ \text{Neg: }]-\infty, -\frac{6-\sqrt{2}}{2}] \cup \left[-\frac{6+\sqrt{2}}{2}, \infty[$$

$$9) \text{ Dom: } \mathbb{R} \quad \text{Ran: } [3, \infty[\\ \text{Inc: } [-2, \infty[\quad \text{Dec: }]-\infty, -2] \\ \text{Pos: } \mathbb{R} \quad \text{Neg: } \emptyset$$

$$10) \text{ Dom: } \mathbb{R} \quad \text{Ran: } [-4, \infty[\\ \text{Inc: } [4, \infty[\quad \text{Dec: }]-\infty, 4] \\ \text{Pos: }]-\infty, 2] \cup [6, \infty[\quad \text{Neg: } [2, 6]$$

$$11) \text{ Dom: } \mathbb{R} \quad \text{Ran: }]-\infty, 2] \\ \text{Inc: }]-\infty, -4] \quad \text{Dec: } [-4, \infty[\\ \text{Pos: } [-5, -3] \quad \text{Neg: }]-\infty, -5] \cup [3, \infty[$$

$$12) \text{ Dom: } \mathbb{R} \quad \text{Ran: }]-\infty, -3] \\ \text{Inc: }]-\infty, -2] \quad \text{Dec: } [-2, \infty[\\ \text{Pos: } \emptyset \quad \text{Neg: } \mathbb{R}$$

$$13) \text{ Dom: } \mathbb{R} \quad \text{Ran: }]-\infty, 3] \\ \text{Inc: }]-\infty, 1] \quad \text{Dec: } [1, \infty[\\ \text{Pos: } [1-\sqrt{3}, 1+\sqrt{3}] \\ \text{Neg: }]-\infty, 1-\sqrt{3}] \cup [1+\sqrt{3}, \infty[$$

$$14) \text{ Dom: } \mathbb{R} \quad \text{Ran: }]-\infty, 4] \\ \text{Inc: }]-\infty, 3] \quad \text{Dec: } [3, \infty[\\ \text{Pos: } [1, 5] \\ \text{Neg: }]-\infty, 1] \cup [5, \infty[$$

$$15) \text{ Dom: } \mathbb{R} \quad \text{Ran: } [4, \infty[\\ \text{Inc: } [1, \infty[\quad \text{Dec: }]-\infty, 1] \\ \text{Pos: } \mathbb{R} \quad \text{Neg: } \emptyset$$

$$16) \text{ Dom: } \mathbb{R} \quad \text{Ran: }]-\infty, 1] \\ \text{Inc: }]-\infty, -4] \quad \text{Dec: } [-4, \infty[\\ \text{Pos: } \left[-\frac{12-\sqrt{3}}{3}, -\frac{12+\sqrt{3}}{3}\right] \\ \text{Neg: }]-\infty, -\frac{12-\sqrt{3}}{3}] \cup \left[-\frac{12+\sqrt{3}}{3}, \infty[$$

$$17) \text{ Dom: } \mathbb{R} \quad \text{Ran: }]-\infty, 2] \\ \text{Inc: }]-\infty, 4] \quad \text{Dec: } [4, \infty[\\ \text{Pos: } [2, 6] \\ \text{Neg: }]-\infty, 2] \cup [6, \infty[$$

$$18) \text{ Dom: } \mathbb{R} \quad \text{Ran: } [-1, \infty[\\ \text{Inc: } [2, \infty[\quad \text{Dec: }]-\infty, 2] \\ \text{Pos: }]-\infty, \frac{4-\sqrt{2}}{2}] \cup \left[\frac{4+\sqrt{2}}{2}, \infty[\\ \text{Neg: } \left[\frac{4-\sqrt{2}}{2}, \frac{4+\sqrt{2}}{2}\right]$$

$$19) \text{ Dom: } \mathbb{R} \quad \text{Ran: }]-\infty, 3] \\ \text{Inc: }]-\infty, 2] \quad \text{Dec: } [2, \infty[\\ \text{Pos: } [2-\sqrt{3}, 2+\sqrt{3}] \\ \text{Neg: }]-\infty, 2-\sqrt{3}] \cup [2+\sqrt{3}, \infty[$$

$$20) \text{ Dom: } \mathbb{R} \quad \text{Ran: } [3, \infty[\\ \text{Inc: } [4, \infty[\\ \text{Dec: }]-\infty, 4] \\ \text{Pos: } \mathbb{R} \\ \text{Neg: } \emptyset$$