

1. Determine if the graph of the parabola concave up or concave down.

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

(g)  $m(x) = 3x^2 + 7x - 6$

(b)  $g(x) = x - x^2$

(h)  $n(x) = x^2 + 5x - 36$

(c)  $h(x) = x^2 - 5x + 6$

(i)  $p(x) = 4x^2 - 17x - 15$

(d)  $j(x) = (2x + 5)(3 - x)$

(j)  $q(x) = x^2 - 1$

(e)  $k(x) = 7 - 6x - 2x^2$

(k)  $r(x) = 8 - 2x^2$

(f)  $l(x) = 5x^2 - 80$

2. Represent the equation of the quadratic function using standard form.

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

(g)  $m(x) = 3x^2 + 7x - 6$

(b)  $g(x) = x - x^2$

(h)  $n(x) = x^2 + 5x - 36$

(c)  $h(x) = x^2 - 5x + 6$

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(k)  $r(x) = 8 - 2x^2$

(f)  $l(x) = 5x^2 - 80$

3. Determine the vertex and the axis of symmetry for the quadratic function. State the interval on which the function is (i) increasing or (ii) decreasing.

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4. Determine the x-intercept(s), if any, and the y-intercept for the function.

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(b)  $g(x) = x - x^2$

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(k)  $r(x) = 8 - 2x^2$

(f)  $l(x) = 5x^2 - 80$

5. Explain how the graph of each quadratic function is related to the graph of  $y = x^2$ .

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(f)  $l(x) = 5x^2 - 80$