Find a quadratic function with the given vertex and passing through the given point.

1) Vertex (4, 5); passes through (1, 2).

2) Vertex (1, 3); passes through (4, −2).

3) Vertex (−5, 2); passes through (−4, 9).

4) Vertex (3, −2); passes through (−3, −3).

5) Vertex (−6, 1); passes through (2, 5).

6) Vertex (4, 0); passes through (7, 8).

7) Vertex (0, −3); passes through (−5, −1).

8) Vertex (2, −4); passes through (3, −5).
Find a quadratic function with the given vertex and passing through the given point.

1) Vertex (4, 5); passes through (1, 2).

\[ f(x) = -\frac{1}{3} (x - 4)^2 + 5 \]

2) Vertex (1, 3); passes through (4, -2).

\[ f(x) = -\frac{5}{9} (x - 1)^2 + 3 \]

3) Vertex (-5, 2); passes through (-4, 9).

\[ f(x) = 7(x + 5)^2 + 2 \]

4) Vertex (3, -2); passes through (-3, -3).

\[ f(x) = -\frac{1}{36} (x - 3)^2 - 2 \]

5) Vertex (-6, 1); passes through (2, 5).

\[ f(x) = \frac{1}{16} (x + 6)^2 + 1 \]

6) Vertex (4, 0); passes through (7, 8).

\[ f(x) = \frac{8}{9} (x - 4)^2 \]

7) Vertex (0, -3); passes through (-5, -1).

\[ f(x) = \frac{2}{25} x^2 - 3 \]

8) Vertex (2, -4); passes through (3, -5).

\[ f(x) = -(x - 2)^2 - 4 \]