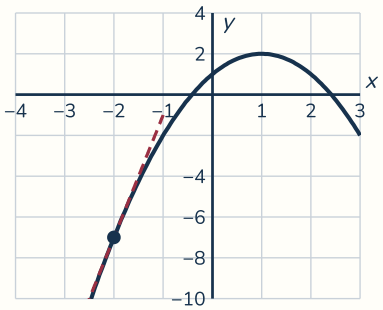
Using derivatives — Slope at a point

Name: _____ Date: _____

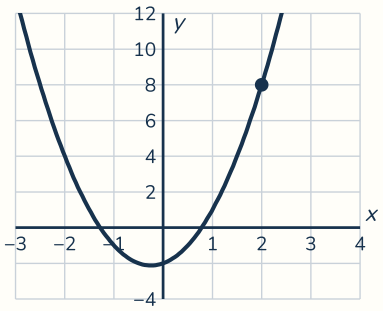
Find the slope of each curve at the point: find f'(x), then put x in.

1 $f(x) = -x^2 + 2x + 1,\ x = -2$

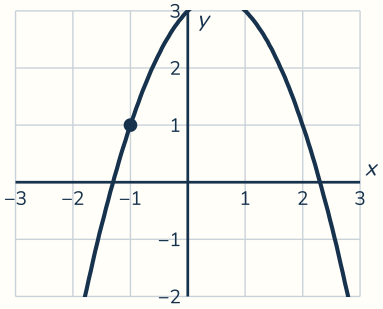
$f'(x) = -2x + 2$
$f'(-2) = -2(-2) + 2$
$= 6$



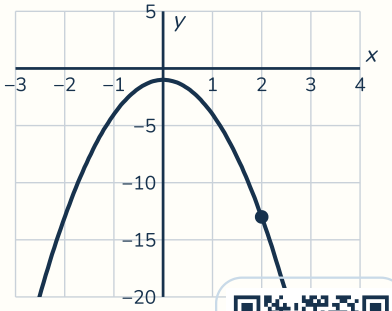
2 $f(x) = 2x^2 + x - 2,\ x = 2$



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



4 $f(x) = -3x^2 - 1,\ x = 2$



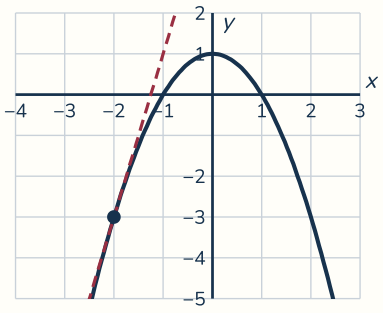
Using derivatives — Tangent lines

Name: _____ Date: _____

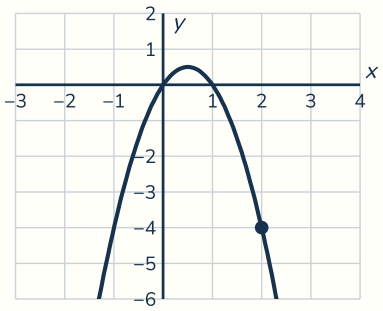
Find the equation of the tangent line at the point given.

1 $f(x) = -x^2 + 1,\ x = -2$

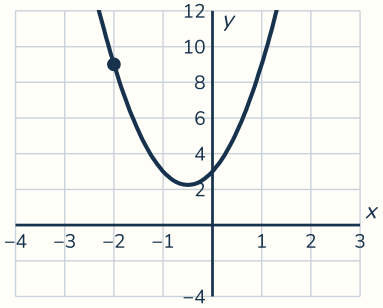
$f'(x) = -2x$
$m = f'(-2) = 4,\ f(-2) = -3$
$y + 3 = 4(x + 2)$
$y = 4x + 5$



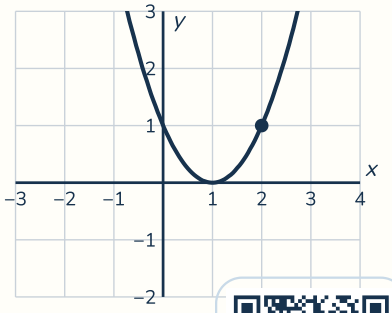
2 $f(x) = -2x^2 + 2x,\ x = 2$



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



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

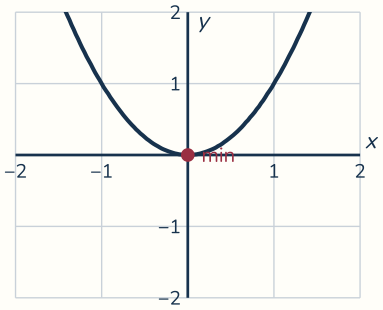


Name: _____ Date: _____

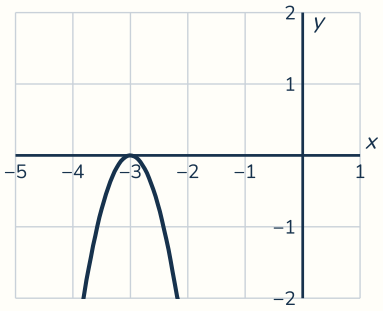
Find where f'(x) = 0 and say if each point is a maximum or a minimum.

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

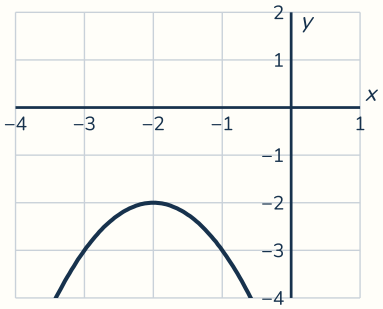
$f'(x) = 2x = 0$
$x = 0, f(0) = 0$
$f''(x) = 2 > 0$, so a minimum



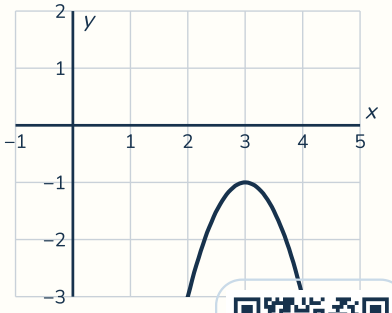
2 **$f(x) = -3x^2 - 18x - 27$**



3 **$f(x) = -x^2 - 4x - 6$**



4 **$f(x) = -2x^2 + 12x - 19$**



Power Pack · Using derivatives — Answer key

The slope at a point

1. $f(x) = -x^2 + 2x + 1$; slope at $x = -2$ → $f'(-2) = 6$

2. $f(x) = 2x^2 + x - 2$; slope at $x = 2$ → $f'(2) = 9$

3. $f(x) = -x^2 + x + 3$; slope at $x = -1$ → $f'(-1) = 3$

4. $f(x) = -3x^2 - 1$; slope at $x = 2$ → $f'(2) = -12$

The tangent line

1. $f(x) = -x^2 + 1$; tangent at $x = -2$ → $y = 4x + 5$

2. $f(x) = -2x^2 + 2x$; tangent at $x = 2$ → $y = -6x + 8$

3. $f(x) = 3x^2 + 3x + 3$; tangent at $x = -2$ → $y = -9x - 9$

4. $f(x) = x^2 - 2x + 1$; tangent at $x = 2$ → $y = 2x - 3$

Stationary points

1. $f(x) = x^2$; stationary points → minimum $(0, 0)$

2. $f(x) = -3x^2 - 18x - 27$; stationary points → maximum $(-3, 0)$

3. $f(x) = -x^2 - 4x - 6$; stationary points → maximum $(-2, -2)$

4. $f(x) = -2x^2 + 12x - 19$; stationary points → maximum $(3, -1)$