

Functions 3: Using the discriminant

Name.....

(1) State the number of solutions for the following quadratics.

(a) $0 = x^2 + 8x + 4$

(b) $0 = x^2 - 2x + 10$

(c) $0 = x^2 + 12x + 36$

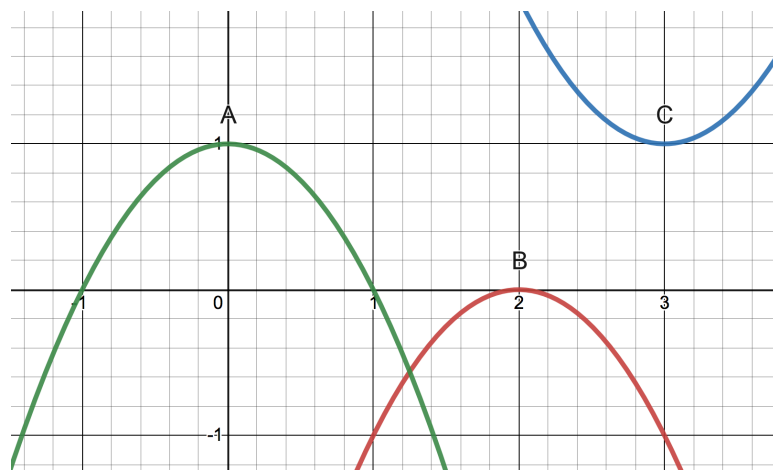
(2) For what value(s) of a , b and c do the following quadratics have 1 repeated root?

(a) $0 = ax^2 + 2x + 4$

(b) $0 = x^2 + bx + 4$

(c) $0 = -3x^2 - 5x + c$

(3) State the nature of the discriminant for the following 3 graphs:



(4) For what value(s) of m does the following quadratic have 1 repeated real root?

$$0 = mx^2 + 2mx + 4$$

(5) For what value(s) of m does the following quadratic have 2 real roots?

$$0 = (m + 6)x^2 + 2mx + 2m$$

- (6) For what value(s) of m does the following quadratic have no real roots?

$$0 = (3m + 4)x^2 + mx - 0.5$$

- (7) For what value(s) of m does the following quadratic have 1 repeated real root?

$$0 = (m + 1)x^2 + mx + m$$

- (8) For what value(s) of m does the following quadratics have 2 real roots?

$$0 = (2m + 1)x^2 + 2mx - 1$$

- (9) For what values of m is the line $y = mx - 1$ a tangent to the curve $y = x^2 + 2x$?

- (10) Given that the graphs of $f(x) = x^2 - 3$ and $g(x) = 2x - k$ do not intersect, find k .