① # of zeros

$b^2 - 4ac > 0$, two solutions/zeros

$b^2 - 4ac = 0$, one solution/zero

$b^2 - 4ac < 0$, no solution/zeros

$f(x) = \overset{a}{-3}x^2 + \overset{b}{8}x + \overset{c}{3}$

$b^2 - 4ac$

$= 8^2 - 4(-3)(3)$

$= 64 + 36$

$= 100$ ∴ 2 solutions/zeros.

A ball is thrown into the air, $h(t) = -5t^2 + 8t + 2$
Can the ball reach a height of 10 metres?

$h = h(t)$

$10 = -5t^2 + 8t + 2$

$0 = \underset{a}{-5}t^2 + \underset{b}{8}t \underset{c}{-8}$

$b^2 - 4ac = 8^2 - 4(-5)(-8)$

$= 64 - 160$

$= -96$ $\therefore$ No, it cannot reach

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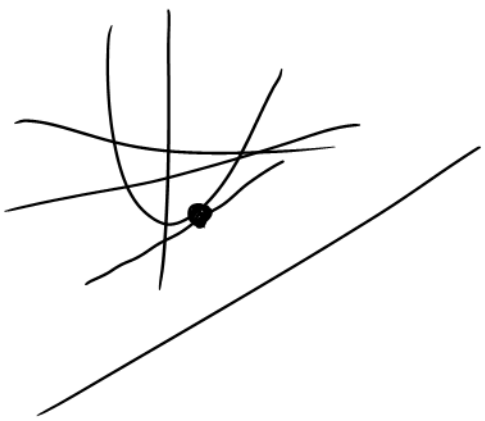
② $f(x) = 2x - 3$ $g(x) = 3x^2 - 4x + 6$

Do these intersect?



$2x - 3 = 3x^2 - 4x + 6$ (−2x, +3 / −2x, +3)

$0 = \underset{a}{3}x^2 \underset{b}{-6}x \underset{c}{+9}$

$b^2 - 4ac = (-6)^2 - 4(3)(9)$

$= 36 - 108$

$= -72$

$\therefore$ no, they do not

Find the points of intersection

$f(x) = x - 2$ $\quad g(x) = x^2 - 5x - 18$

$-x \quad +2 \qquad -x \quad +2$

$x - 2 = x^2 - 5x - 18$

$0 = 1x^2 - 6x - 16$ → solve for the "x" factor or quadratic formula.

$a \quad b \quad c$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{6 \pm \sqrt{6^2 - 4(1)(-16)}}{2}$$

$$x = \frac{6 \pm \sqrt{100}}{2}$$

$$x = \frac{6 \pm 10}{2}$$

(+) $x = \frac{6+10}{2}$

$= 8$

(−) $x = \frac{6-10}{2}$

$x = -2$

$f(8) = 8 - 2$ $\quad f(-2) = -2 - 2$

$f(8) = 6$ $\quad f(-2) = -4$

∴ the POI's are $(8, 6)$ and $(-2, -4)$

Had in 3 things:

1. Quadratic Formula Sheet
2. Soil Erosion Sheet
3. pg 198

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pg 202 # 1, 2, 3, 4, 5, 9, 12, 13, 17, 21, 22, 23

1. Properties of parabolas
2. Partial Factoring to find max/min.
3. Radicals
4. using Quadratic Formula to solve
5. using Factoring to solve
6. Discriminant ($b^2 - 4ac$)
7. Points of Intersection.