Name: _____ ID: A

Solve the quadratic equation by completing the square.

$+\left(\frac{b}{2}\right)^2$ add $\left(\frac{b}{2}\right)^2$ on bothside

7. $5x^2 - 3x = 3$

$\frac{5}{5} \quad \frac{5}{5} \quad \frac{5}{5}$

$x^2 - \frac{3}{5}x = \frac{3}{5}$

$x^2 - \frac{3}{5}x + \left(\frac{\frac{3}{5}}{2}\right)^2 = \frac{3}{5} + \left(\frac{3}{\frac{5}{2}}\right)^2$

$x^2 - \frac{3}{5}x + \left(\frac{3}{10}\right)^2 = \frac{3}{5} + \left(\frac{3}{10}\right)^2$ $\quad (a-b)^2 = a^2 - 2ab + b^2$

$\left(x - \frac{3}{10}\right)^2 = \frac{3}{5} + \frac{9}{100}$ $\longrightarrow$ $\sqrt{\left(x-\frac{3}{10}\right)^2} = \pm\sqrt{\frac{69}{100}}$

$\boxed{x = \frac{3}{10} \pm \frac{\sqrt{69}}{10}}$

Rewrite the equation in vertex form. Name the vertex and y-intercept.

8. $y = x^2 - 8x + 13$

$y = a(x-h)^2 + k$

$x = h = -\frac{b}{2a} = -\frac{-8}{2} = 4$ $\quad \boxed{y = (x-4)^2 - 3}$

$k = y = (4)^2 - 8(4) + 13$

$= -3$

$x = 0$ y-intercept

$\boxed{y = 13}$

What is the absolute value of each number?

9. $2 + 4i$.

$|a + bi| = \sqrt{a^2 + b^2}$

$|2 + 4i| = \sqrt{2^2 + 4^2} = \sqrt{20} = \boxed{2\sqrt{5}}$