Determine the number of zeros for each of the following

1) $f(x) = (x-2)(x+5) - 3$

$= x^2 + 5x - 2x - 10 - 3$

$0 = x^2 + 3x - 13$

$x = \frac{-3 \pm \sqrt{9 - 4(1)(-13)}}{2}$

$x = \frac{-3 \pm \sqrt{61}}{2}$

$x = \frac{-3 + \sqrt{61}}{2}$ & $x = \frac{-3 - \sqrt{61}}{2}$

∴ 2 zeros

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

$= -2(x+3)(x+3) + 2$

$= -2(x^2 + 6x + 9) + 2$

$= -2x^2 - 12x - 18 + 2$

$= -2x^2 - 12x - 16$

$D = b^2 - 4ac$

$= (-12)^2 - 4(-2)(-16)$

$= 144 - 128$

$= 16$

∴ 2 roots

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