Review: Quadratics

1. Expand and simplify

a. $(-2t - r)(-3t + r)$

$6t^2 - 2tr + 3tr - r^2$

$6t^2 + 1tr - r^2$

b. $(5q - 8r)^2 (5q - 8r)$

$= 25q^2 - 40qr - 40qr + 64r^2$

$= 25q^2 - 80qr + 64r^2$

$\sqrt{121} = 11$

$\sqrt{9} = 3$

2. Factor each of the following

a. $3x^2 - 6x$

$3x \left(3x \quad 3x \right)$ G.C.F

$= 3x$

$= 3x(x - 2)$

b. $d^2 - 12d + 35$

Sum   Prod

$(d - 7)(d - 5)$

c. $121x^2 - 9y^2$

diff. of squares

$(11x + 3y)(11x - 3y)$

3. For the quadratic $y = -2(x-4)(x+6)$ calculate the following

a. the y-intercept

FOIL to see last #

$-2(x^2 + 6x - 4x - 24)$

$-2(x^2 + 2x - 24)$

$-2x^2 - 4x + 48$ ∴ y-int = 48

b. the zeros

$x - 4 = 0$ or $x + 6 = 0$

$\boxed{x = 4}$ $\boxed{x = -6}$

c. the axis of symmetry

add zeros
―――
2

$a.o.s. = \dfrac{4 + -6}{2} = \dfrac{-2}{2} = -1$

d. the optimal value

Sub a.o.s. #
into equation
for x

$-2(-1-4)(-1+6)$

$-2(-5)(5)$

$= 50$

e. vertex

$(a.o.s , opt.val)$

$(-1, 50)$

f. sketch

label vertex, zeros and y-int