April 27, 2016

S. G.

#24) $f(x) = [(x-3)(x+2)](3x-4)$

Degree: 3 $= (x^2 - x - 6)(3x-4)$

L.Coe.: 3 $= 3x^3 - 4x^2 - 3x^2 + 4x - 18x + 24$

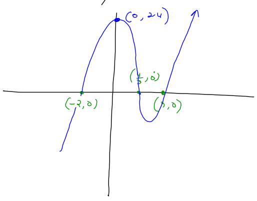
Constant: 24 $= 3x^{3} - 7x^2 - 14x + 24$

End B: Down. up

Range: ∞

Zeros: $(3,0)$, $(-2,0)$, $(\frac{4}{3}, 0)$

y-int: $(0, 24)$



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$f(x) = 2x^2 - 8x + 5$

Convert to Vertex form

$2x^2 - 8x + 5$

$2\left(x^2 - 4x + \frac{5}{2}\right)$

$2\left[x^2 - 4x = -\frac{5}{2}\right]$

$-4 \cdot \frac{1}{2} = -2$

$(-2)^2 = 4$

$2\left[(x-2)^2 = -\frac{5}{2} + \frac{4}{1}\right]$

$= \frac{-5+8}{2}$

$= \frac{3}{2}$

$f(x) = 2(x-2)^2 - \frac{3}{2}$

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$2(x-2)^2 - \frac{3}{2}$

Vertex: $(h, k) = (2, -\frac{3}{2})$

open: up

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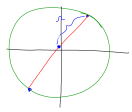
$(3, 9)$ & $(-4, -8)$



mid-pt $\frac{x_1 + x_2}{2}$

$(-\frac{1}{2}, \frac{1}{2})$ $\frac{y_1 + y_2}{2}$

Find r

$d = r = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

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

$\boxed{(x + \frac{1}{2})^2 + (y - \frac{1}{2})^2 = \frac{169}{2}}$

$= \sqrt{(-\frac{1}{2} - 3)^2 + (\frac{1}{2} - 9)^2}$

$= \sqrt{(\frac{-1-6}{2})^2 + (\frac{1-18}{2})^2}$

$= \sqrt{(-\frac{7}{2})^2 + (-\frac{17}{2})^2}$

$= \sqrt{\frac{49}{4} + \frac{289}{4}}$

$= \sqrt{\frac{338}{4}}$

$r = \frac{\sqrt{338}}{2}$

$\left(\frac{\sqrt{338}}{2}\right)^2 = \frac{338}{4} = \frac{169}{2}$

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