

1. Sketch the graph of the functions below. Please show all your work and clearly show relevant points.

<p>A. $y = 3x^2 - 5x - 2$ x-intercepts _____ y-intercepts _____ Focus: _____ Center: _____</p>	<p>B. $y = 2^{x+4} - 1$ Horizontal Asymptote: _____</p>
<p>C. $y = -(x - 1)^2(x + 1)^3(x - 2)(x + 2)$ D. x-intercepts _____ y-intercepts _____</p>	<p>E. $f(x) = \frac{3x}{x^2-4}$ x-intercepts _____ y-intercepts _____ Vertical Asymptote: _____ Horizontal/Oblique Asymptote: _____</p>

F. $f(x) = \log_3(x + 1) - 2$

Vertical Asymptote: _____

G. $g(x) = \frac{3x^2 - 2x - 1}{x + 1}$

x-intercepts _____ y-intercepts _____

Vertical Asymptote: _____

Horizontal/Oblique Asymptote: _____

H. $f(x) = 2x^3 - 5x^2 - 4x + 3$

a) Find the Possible Rational Zeros: _____

b) Use Synthetic Division to find the actual zeros: _____

c) Find the x -intercepts : _____ y -intercepts: _____

d) Sketch the graph

e) Solve the inequality $2x^3 - 5x^2 - 4x > -3$ (Hint: Use your answer in part d))

2. Identify the conic section. Sketch the graph of the conic section and show all the relevant parts in the graph clearly. If you identify the conic section as
- I. a circle, please find the center and radius.
 - II. as a parabola, please find the vertex, focus, and directrix.
 - III. as an ellipse, please find the center, major and minor axis, vertices, and foci.
 - IV. as a hyperbola, please find the center, vertices, foci, and asymptotes.

A. $4x^2 = -8x + 10y - y^2 + 71$

B. $-\frac{5}{2}y^2 + 10y + \frac{1}{2} = x$

C. $4x^2 + 16x + 9y^2 + 18y = 119$

D. $-\frac{(x-5)^2}{16} + \frac{(y-1)^2}{25} = -1$