

The point value of each problem is indicated. To obtain full credit you must have the correct answers along with **supporting work** to justify them. **Partial credit** will be given based on the work that is shown. However, answers without supporting work will receive **no credit**.

1. Consider the function given by $F(x) = 2x^4 + x^3 - 3x^2$
- a) (9 pts.) Find the x -intercepts and determine whether the graph crosses or touches the x -axis at each x -intercept. Does the graph have any type of symmetry?

$$F(x) = x^2(2x^2 + x - 3) = x^2(2x + 3)(x - 1)$$

$x = \overset{\text{odd}}{\left(-\frac{3}{2}\right)}, \overset{\text{even}}{(0)}, \overset{\text{odd}}{(1)}$ multiplicity

↙ ↘
Cross touch

ANSWER: _____

- b) (9 pts.) Determine the turning points of the graph of F , approximating the coordinates with a graphing utility, if necessary. Round your answers off to **three** decimal places. Find the power function that the graph of F resembles for **large** values of $|x|$.

Turning pts are the points where graph changes from increasing to decreasing (or the other way around)

Use your calculator to find them

For large $|x|$, $y \approx 2x^4$

ANSWER: _____

2. Let g be the function defined by $g(x) = \frac{2x^2 - 6}{x^2 + 2x - 8}$ ~~$2(x-\sqrt{3})(x)$~~

a) (6 pts.) Find the x - and y -intercepts and vertical asymptotes.

$$g(x) = \frac{2(x-\sqrt{3})(x+\sqrt{3})}{(x+4)(x-2)}$$

$(-\sqrt{3}, 0)$
 $(\sqrt{3}, 0)$

$\left. \begin{matrix} x=4 \\ x=2 \end{matrix} \right\}$ v. A.
x-intercepts are at $x = \pm\sqrt{3}$
y-intercept is $(0, \frac{3}{4})$

ANSWER: _____

b) (4 pts.) Find the horizontal or oblique asymptotes.

No oblique

horizontal $y = 2$

ANSWER: _____

c) (8 pts.) Sketch the graph of g , making sure to include all the information found in parts a) and b).

