College Algebra	**Name:** _____
Study Guide 12	**Class:** _____
Due Date: _____	**Score:** _____

No Work $\Leftrightarrow$ No Points

Use Pencil Only $\Leftrightarrow$ Be Neat & Organized

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1. (2 points) Use synthetic division to show 1 is a solution of $4x^2 - 3x - 1 = 0$.

1. _____

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2. (3 points) Use synthetic division to show -2 is a solution of $x^3 + 6x^2 + 12x + 8 = 0$.

2. _____

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3. (4 points) Use synthetic division to show $x + 3$ and $x - 4$ are factors of $p(x) = 2x^3 + x^2 - 27x - 36$, then write $p(x)$ in factored form.

3. _____

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4. (4 points) Use synthetic division to show $3x + 1$ is a repeated factor of $p(x) = 9x^3 - 39x^2 - 29x - 5$, then write $p(x)$ in factored form.

4. _____

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5. Find a second degree polynomial equation $p(x) = ax^2 + bx + c$, with the given zeros below:

(a) (3 points) -5 **and** $\frac{1}{2}$

(a) _____

(b) (3 points) $\pm 4i$

(b) _____

(c) (4 points) $-5 \pm 3i$

(c) _____

(d) (4 points) $2 \pm \sqrt{5}$

(d) _____

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6. Find a third degree polynomial equation $p(x) = ax^3 + bx^2 + cx + d$, with the given zeros below:

(a) (3 points) $-5, 1$**, and** $\frac{-1}{2}$

(a) _____

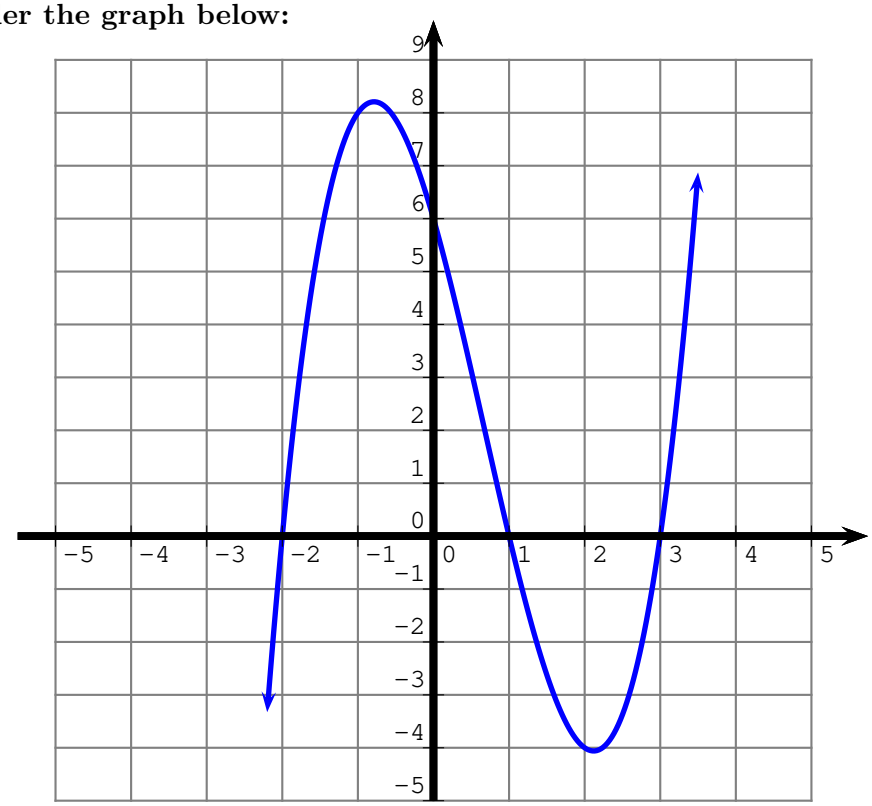
(b) (3 points) $\pm\frac{2}{3}$**, and** 2

(b) _____

(c) (4 points) $3 \pm 4i$**, and** -2

(c) _____

7. Consider the graph below:



(a) (3 points) What are the x-intercepts of this graph?

(a) _____

(b) (2 points) What is the y-intercept of this graph?

(b) _____

(c) (5 points) Find a third degree polynomial equation $p(x) = ax^3 + bx^2 + cx + d$ for the graph displayed above.

(c) _____

(d) (3 points) Find the interval where $p(x) \geq 0$.

(d) _____