

NAME: \_\_\_\_\_

Write your answers in this sheet and in other sheets. Do your graphs in the axes provided or in graph paper. Please **STAPLE this one to your other sheets** if any.

1. Solve the following inequalities. Express the final answer in interval notation.

a)  $(x + 7)(x - 3) > 0$

b)  $-x^2 + x > 0$

c)  $x^2 - 5x \geq -6$

d)  $x^3 + 2x^2 - 4x \leq 8$

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2. Solve the following inequalities. Express the final answer in interval notation.

a)  $\frac{x - 2}{x + 3} > 0$

b)  $\frac{3x + 5}{6 - 2x} \geq 0$

c)  $\frac{x^2 - 3x + 2}{x^2 - 2x - 3} < 0$

d)  $\frac{x}{x + 2} \leq 2$

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3. Do exercises 11 and 51 from exercise set 2.7 in the textbook.
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4. Find the domain of the following functions. Remember that for a square root to be a real number, the radicand must be greater than or equal to 0.

a)  $f(x) = \sqrt{2x^2 - 5x + 2}$

b)  $g(x) = \sqrt{\frac{x}{2x - 1} - 1}$

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5. Solve the following inequalities. Express the final answer in interval notation.

a)  $x^3 + 2x^2 - 4x - 8 > 0$

b)  $x^4 \geq -4x^2$

c)  $\frac{1}{x + 1} < \frac{2}{x - 1}$

d)  $\frac{x^3 - 4x^2 + 6x - 2}{x^2 - 5x + 6} \leq x$

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6. Do exercises 23, 25, 27, 41, 43, 67, 69, 71 from exercise set 4.4 in the textbook.