Exam 2

Name: \_\_\_\_\_

Circle your answer to problems 1-3. You must show correct work to receive credit. (8 pts.) 1)  $i(2-3i)^2 =$ 

- A. 12 5*i*
- B 13*i*
- C. 5
- D. 12 + 13*i*
- E. 13 + 5*i*
- F. 5 +12*i*
- G. None of the above

(8 pts.) 2) Find the distance between (2, 3) and (-6, 1).

- A.  $2\sqrt{5}$ B.  $2\sqrt{17}$ C.  $\sqrt{82}$ D.  $4\sqrt{2}$ E.  $\sqrt{6}$
- F.  $4\sqrt{5}$

(8 pts.) 3) Solve  $B = \frac{1}{3}k(1+r^2)$  for *r*. Assume r > 0.

A. 
$$r = \sqrt{\frac{3B}{k} - 1}$$
  
B.  $r = \sqrt{\frac{B}{k} - 1}$   
C.  $r = \sqrt{3B - k - 1}$   
D.  $r = \sqrt{B - \frac{1}{3}k - 1}$   
E.  $r = \sqrt{\frac{B}{3k} + 1}$   
F.  $r = \sqrt{\frac{3B}{k} - 3}$ 

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Place your answers in the spaces provided. You must show correct work to receive credit.

(18 pts.) 4) Solve for *x*. Simplify completely.

(10 pts.) a)  $3x^2 + 6x + 4 = 0$ 

(8 pts.) b)  $\sqrt{x+18} = 2 - x$ 

(8 pts.) 5. Solve the inequality and express your answer in interval notation.

|x - 2| = 4

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Place your answers in the spaces provided. You must show correct work to receive credit.

(8 pts.) 6. Find a general form, Ax + By = C, (where A, B and C are integers), of the equation of the line through (-4, 3) and perpendicular to the line 2x - 5y = 15.

- (8 pts.) 7. Find the standard form of the equation of the circle with endpoints of a diameter at (-3, -5) and (-7, 9).

(12 pts.) 8. Solve the inequality and express the solution in interval notation. You must use a sign chart (or equivalent) to support your answer.

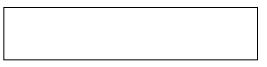
 $x^3 - 4x^2 + 4x > 0$ 

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Place your answers in the spaces provided. You must show correct work to receive credit.

(10 pts.) 9. Bill's allowance in 1970 was \$49. In 2000, still living at home (how sad), his allowance was \$124. Assume his allowance is <u>linearly</u> related to time. Express his allowance, *A* (in dollars), in terms of time, *t* (in years), with t = 0 corresponding to the year 1970.



(12 pts.)10. Starting with a piece of cardboard whose length is 3 inches longer than twice its width, an open box (no top) is to be constructed by removing 2-inch squares from the corners and folding up the sides. What does the original width of the cardboard have to be in order to produce a box with a volume of 30 cubic inches? Label the picture, set up an equation, and solve.

