1. Solve for x: \( 3[2x-(x+7)] = 5(x-3) \).

2. Solve for x: \( x+8 = 2(x-2) - x \).

3. The per capita personal income in the US from 1998 to 2005 can be approximated by the linear equation \( y = 944.7t + 19,898 \) for \( 8 \leq t \leq 15 \), where \( t \) represents the year, with \( t=8 \) corresponding to 1998. Used the model to estimate the year in which the per capital personal income was $32,000.

4. A total of $32,000 is invested in two municipal bonds that pay 5.75% and 6.25% simple interest. The total annual interest is $1930. How much is invested in each bond? Write your answers in the blanks below.
   \[
   \text{________________} \text{ invested in bond paying 5.75%} \\
   \text{________________} \text{ invested in bond paying 6.25%}
   \]

5. Solve for x: \( 11x^2 + 33x = 0 \).

6. Solve for x: \( 12x = x^2 + 27 \).

7. Solve for x: \( 4x^2 - 4x - 4 = 0 \).

8. The demand equation for a product is \( p = 60 - 0.0004x \) where \( p \) is the price per unit and \( x \) is the number of units sold. The total revenue \( R \) for selling \( x \) units is given by \( R = xp \). How many units must be sold to produce a revenue of $100,000?

9. A college algebra instructor jumps from the top of 100-foot building into a shallow pool of water. How long will it take for the instructor to hit the water?

10. A college algebra student shoots a potato gun straight into the air with a velocity of 200 feet per second. If the potato was launched from 5 feet above the ground, when will the potato hit the ground?

11. A farmer builds a rectangular pen next to a river to cage his ostriches. There must be fence on 3 sides of the rectangle, but the river encloses the last side. If the pen is twice as long as it is wide (it runs along the river) and is 3200 square feet, what are the dimensions of the pen?

12. Solve for r: \( (r-5)^{2/3} = 16 \).

13. Solve for z: \( \frac{1}{z} - \frac{1}{z+1} = 3 \).

14. Solve for x: \( |2x-1| = 7 \).

15. Solve for x: \( x^4 + 2x^3 = -x^2 \).

16. Find the midpoint and distance between (2,-3) and (-4,0).
17. The endpoints of the diameter of a circle are (-5,3) and (3,-3).
   a. Find the center of the circle.
   b. Find the radius of the circle.
   c. Find the standard form of the equation of the circle.

18. Sketch the circle whose equation is \((x+3)^2 + (y-2)^2 = 9\).

19. Consider the equation \(y = x^2 - 2x - 3\).
   a. Find the x-intercepts.
   b. Find the y-intercepts.

20. Solve for \(u\):
\[
\frac{4}{u-1} + \frac{6}{2u+1} = \frac{5}{2u+1}
\]

21. Solve for \(t\):
\[
\sqrt{3t+2} = t + 5
\]

22. Simplify:
\[
\frac{4x^3 - 14x}{(2 + 6x)x}
\]

The following problems will be similar to problems on the graphing (non-calculator) portion of the exam:

23. Give a table with at least 3 ordered pairs and graph \(y = \sqrt{x + 3}\).

24. Find the x- and y- intercepts of \(3x + 2xy - y = 4\).

25. Graph \((x - 2)^2 + (y + 3)^2 = 4\).