
PART III: Questions 21 - 30, Self select

Choose **FIVE** out of the next TEN questions to complete. **You must show all your work and clearly indicate your answer for full credit.** CROSS OUT the problems that you do not want graded.

Find the inverse of the matrix without using your calculator.

21)

$$\begin{bmatrix} -2 & 2 \\ -6 & 1 \end{bmatrix}$$

Write the partial fraction decomposition of the rational expression.

22)

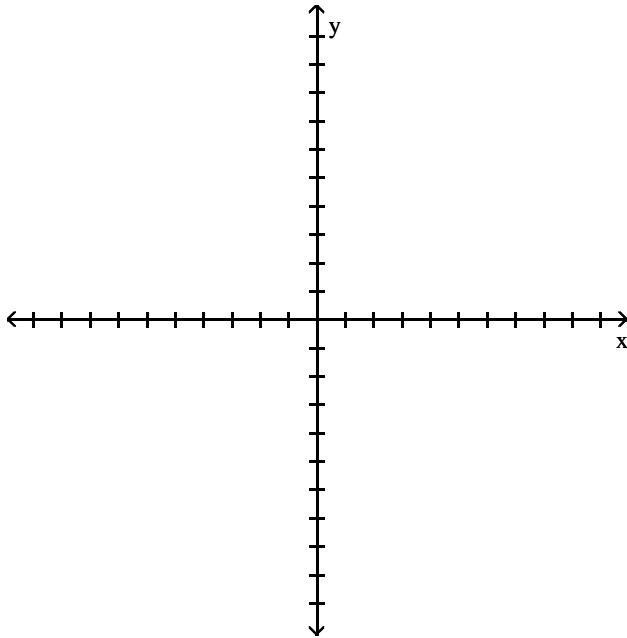
$$\frac{x}{(x - 6)(x - 7)}$$

Use synthetic division and the Factor theorem to determine whether $x - c$ is a factor of $f(x)$.

23) $f(x) = x^3 + 4x^2 - 10x + 12$; $x + 6$

Find the center (h, k) and radius r of the circle. Graph the circle.

$$24) x^2 + y^2 - 2x - 12y + 21 = 0$$



Solve the problem.

25) Find the amount earned at the end of 4 years if \$6000 is invested at a rate of 8.5% compounded monthly.

The sequence is defined recursively. Write the first four terms.

$$26) a_1 = 3 \text{ and } a_n = 4a_{n-1} - 2 \text{ for } n \geq 2$$

Find the sum of the infinite geometric series.

27)

$$\sum_{k=1}^{\infty} 2 \left(\frac{1}{3} \right)^{k-1}$$

Solve the equation. Give BOTH the exact solution and the approximate solution to the nearest hundredth.

$$28) 2^{(2x)} = 3^{(x+1)}$$

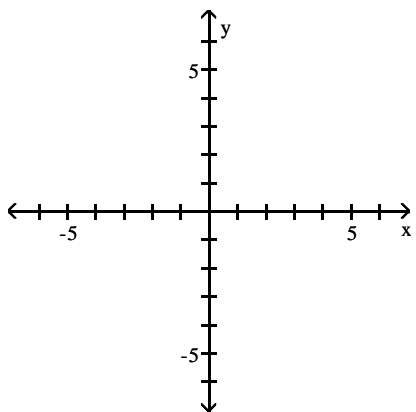
Find the real solutions of the equation.

$$29) x - 9x^{1/2} + 20 = 0$$

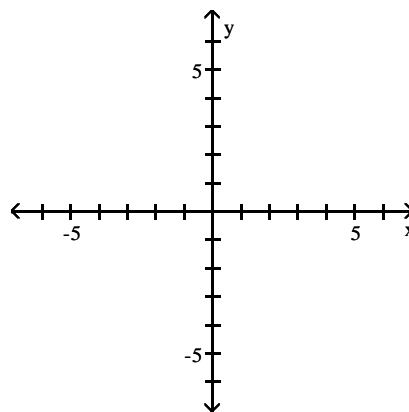
Graph BOTH functions below. For each function list at least three ordered pairs that lie on the graph.

30)

$$f(x) = \log_3 x$$



$$g(x) = 3^x$$



Answer Key

Testname: MATH 1050 FALL 2006 FINAL EXAM FORM E PART 3

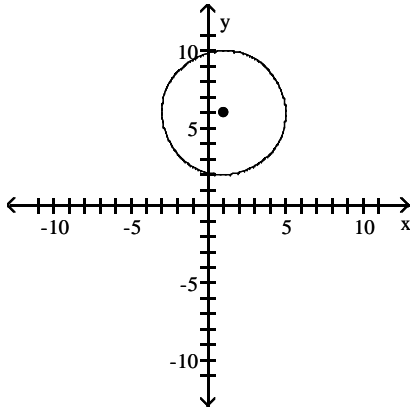
21)

$$\begin{bmatrix} \frac{1}{10} - \frac{1}{5} \\ \frac{3}{5} - \frac{1}{5} \end{bmatrix}$$

22) $\frac{-6}{x-6} + \frac{7}{x-7}$

23) Yes

24) $(h, k) = (1, 6); r = 4$



25) \$8419.59

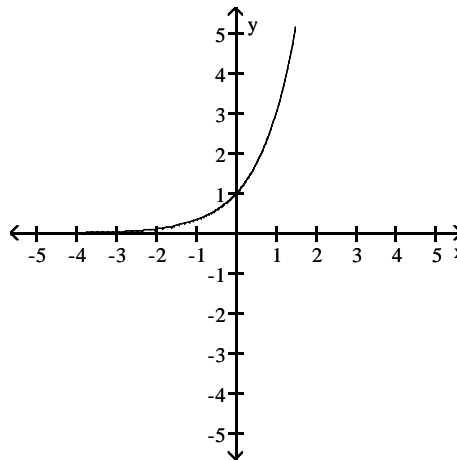
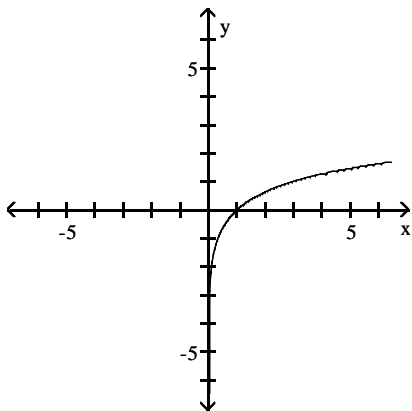
26) 3, 10, 38, 150

27) 3

28) Exact answers may vary. $x = \frac{\ln 3}{2\ln 2 - \ln 3}, x \approx 3.82$

29) {16, 25}

30)



$f(1/3) = -1, f(1) = 0, f(3) = 1, \text{ etc.}$

$g(-1) = 1/3, g(0) = 1, g(1) = 3, \text{ etc.}$