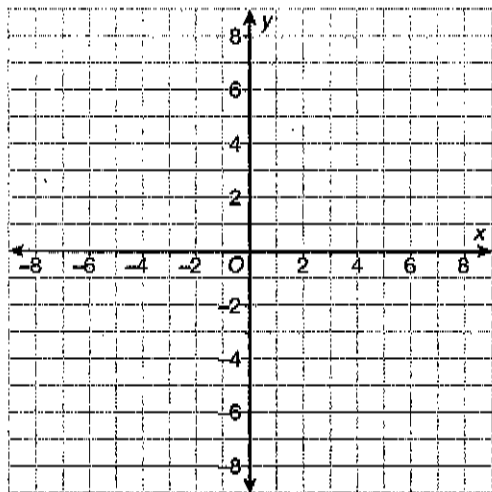


Cumulative Test

20A

1. (100) Graph the following function. Identify the equations of any vertical asymptotes.

$$y = \frac{8}{x^2 - 4}$$



2. (81) Rewrite $\ln\left(\frac{6e^3}{v^5}\right)^6$ as a sum or difference of terms if possible. Then simplify.

3. (70) Solve the equation.

$$-5\sqrt[3]{x-2} = 15$$

4. (94) Solve $\frac{x-9}{x+7} > 0$ by finding the sign of the numerator and the denominator of the rational expression.

5. (37) Find any values of x for which the following expression is undefined.

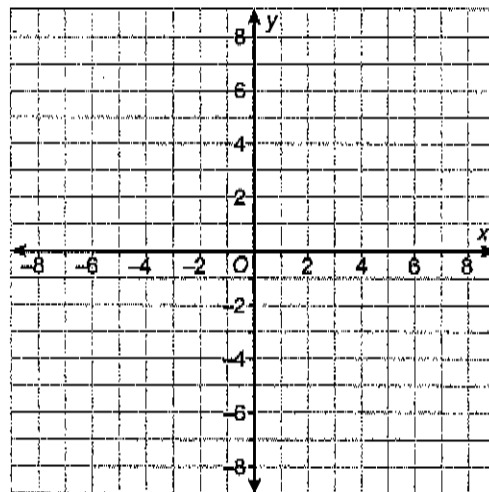
$$\frac{1}{7x^2 - 65x + 18}$$

6. (99) Find the dot product between the vectors $\begin{bmatrix} -3 \\ 5 \end{bmatrix}$ and $\begin{bmatrix} -2 \\ 9 \end{bmatrix}$.

7. (92) Find a_1 of an arithmetic sequence given that $a_8 = 28$ and $a_{19} = 61$.

8. (98) Graph the following equation. Identify the values of a , b , and c , as well as the major and minor axes. Calculate the eccentricity e .

$$\frac{x^2}{5^2} + \frac{y^2}{3^2} = 1$$



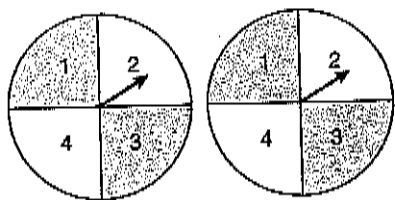
9. (78) Solve $25x^3 - 25x = 0$.

10. (95) Determine whether the polynomial $P(x)$ has a zero remainder when divided by $(x-3)$. Determine $Q(x)$.

$$P(x) = x^5 - 5x^4 - 2x^3 + 18x^2 + 24x - 18$$

11. (91) Write the equation of the circle that has a diameter whose endpoints are located at (2, 3) and (6, 5).

12. (68) Suppose the two spinners shown are each spun once. Find the probability that the first spinner lands on a number less than 4 and the sum of the spinners is greater than 5.



13. (5) Solve for a , b , c , and d .

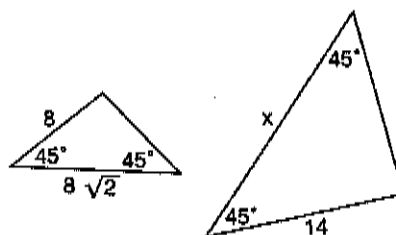
$$\begin{bmatrix} 16 & b \\ a+c & 7 \end{bmatrix} = \begin{bmatrix} 7+a & -18 \\ 31 & d \end{bmatrix}$$

14. (56) Find the measure of the reference angle for the given angle.

$$\theta = 135^\circ$$

15. (93) If \$500 is invested at 7% compounded continuously, how long would it take for the value of the investment to reach \$800?

16. (52) Find the length of x given the triangles shown.



17. (63) Use a reference angle to find the sine, cosine, and tangent of 240° . Find exact values.

18. (96) Convert the polar coordinate $\left(5, \frac{2\pi}{3}\right)$ to Cartesian coordinates.

19. (7) Solve $6n - 8 = 15n + 28$.

20. (97) The fifth term of a geometric sequence is 405. The common ratio is 3. Find the eleventh term.