

Test 27

Slows

(47)

See #2

$$\frac{9x+40t}{40x} = R \frac{100}{9x+40t}$$

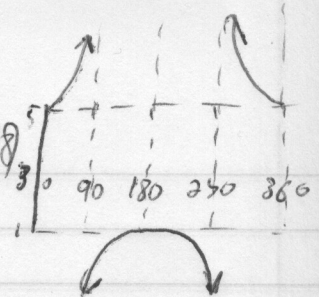
$$\frac{4000x}{9x+40t}$$

$$6) 9(x^2+18x+81) + 16(y^2-8y+16) = -841 + 729 + 256$$

$$\frac{9(x+9)^2}{144} + \frac{16(y-4)^2}{144} = 1 \quad x+9$$

$$\frac{(x+9)^2}{16} + \frac{(y-4)^2}{9} = 1 \quad C = (-9, 4)$$

minor = 6
major = 8



$$-3(0+6) + 4(0-3) - 1(-2-2)$$

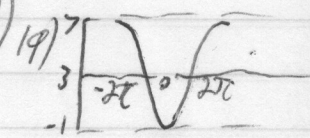
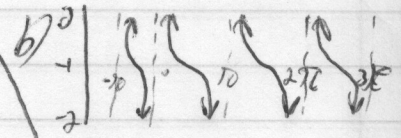
$$-18 - 12 + 10 = -20$$

$$11) (x^2+4x+4) - 9(y^2+4y+4) = -4 + 4 - 36$$

$$\frac{(x+2)^2}{4} - \frac{(y+2)^2}{36} = 1 \quad C = (-2, -2)$$

$V = (-2, 0)$ and $(-2, -4)$

Asymptotes = $y = \frac{1}{3}x - \frac{4}{3}$ and $y = -\frac{1}{3}x - \frac{8}{3}$



$$12) r = \frac{n}{c-ny} \quad 200 \cdot \frac{n}{c-ny} = \text{tickets}$$

$$\frac{200n}{c-ny}$$

$$20) a) y = \tan \theta$$

$$b) y = 6 + 8 \cos x$$

806 cis 330.26

- 1.68 cis 82.57°
- 1.68 cis 172.57°
- 1.68 cis 262.57°
- 1.68 cis 352.57°

$$13) A+B = \begin{bmatrix} 3 & -3 \\ 12 & -3 \end{bmatrix}$$

$$A-B = \begin{bmatrix} -1 & -11 \\ -3 & 9 \end{bmatrix}$$

$$2A = \begin{bmatrix} 2 & -14 \\ 10 & 6 \end{bmatrix}$$

$$y = 3, \quad y \log 8 = \log 3$$

$$y = \frac{\log 3}{\log 8}$$

$$- \log(0.0034) = 2.47$$

$$10^{-2.8} = (1.6 \cdot 10^{-8})$$

$$\frac{8.19 \cdot 2.67}{14.74} = 1.48$$

$$14) \log_7(7^2 x^{\frac{2}{5}} y^{\frac{4}{5}} z^4)$$

$$2 + \frac{2}{5} \log_7 x + \frac{4}{5} \log_7 y + 4 \log_7 z$$

$$15) a_1 = 5 \quad r = -\frac{1}{3} \quad \sum_{i=1}^5 = 3.75$$

$$16) \frac{x+3}{x-2} = 6$$

$$x+3 = 36x-72$$

$$75 = 35x$$

$$x = \frac{15}{7}$$

$$17) \frac{\cos 2x + 1}{\sin 2x} = \frac{\cos^2 x - \sin^2 x + 1}{2 \sin x \cos x} = \frac{2 \cos^2 x}{2 \sin x \cos x} =$$

$$\frac{\cos^2 x}{\sin x \cos x} = \frac{\cos x}{\sin x} = \cot x$$

$$8 \sin x - 1)(\sin x + 1)$$

$$9) \sin x = -1, \frac{1}{2}$$

$$270^\circ, 30^\circ, 150^\circ$$

$$\frac{7\pi}{6}, \frac{5\pi}{6}, \frac{3\pi}{2}$$

$$\tan 2x = \sqrt{3}$$

$$60^\circ, 240^\circ, 420^\circ, 600^\circ$$

$$30, 120, 210, 300$$

$$\frac{7\pi}{6}, \frac{2\pi}{3}, \frac{7\pi}{6}, \frac{5\pi}{3}$$

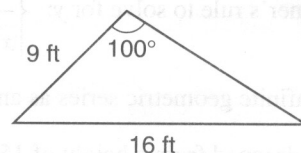
11
1331
4641

1. Ethan could slice 9 tomatoes in 40 minutes and Jennifer could slice t tomatoes in x minutes. How long would they have to work together to finish slicing 100 tomatoes?

2. Use cofactors to evaluate:

$$\begin{vmatrix} -3 & 4 & -1 \\ 4 & 2 & 3 \\ 1 & -2 & 0 \end{vmatrix}$$

3. Find the area of this triangle.



4. Find the four fourth roots of $7 - 4i$ and express the roots in polar coordinates.

5. Express $\log_8 3$ in terms of natural logarithms. Do not find a numerical answer.

6. (a) Find the pH of a liquid if H^+ is 3.4×10^{-3} mole per liter.

- (b) The pH of a solution is 7.8. What is the concentration of hydrogen ions (H^+) in moles per liter of the solution?

7. Use a calculator to compute: $\frac{\sqrt[4]{4500} \sqrt[9]{6800}}{\sqrt[3]{3200}}$

8. Find the middle term of $(4x^2 - 7y)^4$.

9. Solve the following equations given that $0 \leq x < 2\pi$:

(a) $2 \sin^2 x + \sin x - 1 = 0$

(b) $\sqrt{3} - \tan 2x = 0$

10. The general form of the equation of an ellipse is $9x^2 + 16y^2 + 162x - 128y + 841 = 0$. Write the equation in standard form and give the coordinates of the center, the length of the major axis, and the length of the minor axis. Then graph the ellipse.

11. The general form of the equation of a hyperbola is $-9y^2 + x^2 - 36y + 4x + 4 = 0$. Write the equation of this hyperbola in standard form and give the coordinates of the center, the coordinates of the vertices, and the equations of the asymptotes. Then graph the hyperbola.

12. Bethany and Ty had \$200 to buy theater tickets. Star Tickets, Inc. was selling n tickets for c dollars. Since they arrived first at the box office, they got a discount of y dollars for each ticket. How many theater tickets could they buy?

13. Find $A + B$, $A - B$, and $2A$ where A and B are defined as follows: $A = \begin{bmatrix} 1 & -7 \\ 5 & 3 \end{bmatrix}$, $B = \begin{bmatrix} 2 & 4 \\ 8 & -6 \end{bmatrix}$

14. Expand as the sum of the individual logarithms, each of whose argument is linear: $\log_7 \left(\frac{49 \sqrt[5]{x^2 y^4}}{z^{-4}} \right)$

15. Find the sum of this infinite geometric series: $5 - \frac{5}{3} + \frac{5}{9} - \frac{5}{27} + \dots$

16. Solve for x : $\log(x + 3) - \log(x - 2) = 8 \log \sqrt[4]{6}$

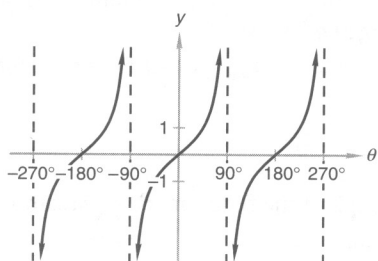
17. Show: $\frac{\cos 2x + 1}{\sin 2x} = \cot x$

18. Sketch the graph of each of the following: (a) $y = 3 + 2 \sec \theta$ (b) $y = \cot \theta - 1$

19. Sketch the graph of $y = 3 + 4 \cos \frac{1}{2}(x + 2\pi)$.

20. Write the equations of these trigonometric functions:

(a)



(b)

