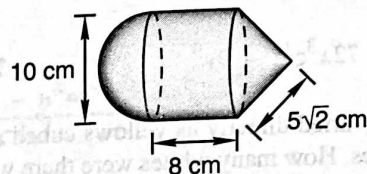


- The sum of the digits of a two-digit counting number is 15. When the digits are reversed, the new number is 27 more than the original number. What was the original number?
- Which of the following sets of ordered pairs are functions?
  - $\{(2, 6), (1, 3), (3, 5), (5, 2)\}$
  - $\{(-1, 6), (2, 3), (3, 6), (3, 5)\}$
  - $\{(2, 3), (3, 4), (4, 5), (5, 6), (7, 8)\}$
  - $\{(-2, 1), (3, 2), (-1, 6), (4, 8)\}$
- Graph the following sets on the real number line.
  - $\{x \in \mathbb{R} \mid |x - 4| < 3\}$
  - $\{x \in \mathbb{R} \mid |x - 3| > 4\}$
- Convert  $5\hat{i} + 12\hat{j}$  to polar coordinates. (Write four forms for this point.)
- Let  $f(x) = x^2 + 2x - 6$ . Evaluate: (a)  $f(-4)$  (b)  $f(8)$
- Factor: (a)  $125p^3b^6 - 216k^9$  (b)  $x^{4b} - y^{4c}$
- A solid is made up of a hemisphere, a right circular cylinder, and a right circular cone, as shown. Find the volume of the solid.



8. Find the domain of the function defined by each equation:

(a)  $f(x) = \sqrt{x + 5}$

(b)  $g(x) = \frac{1}{x^2 - 9}$

9. Convert  $7/\underline{-142^\circ}$  to rectangular coordinates.

10. Factor:  $5x^{4n+2} + 15x^{2n+1}$

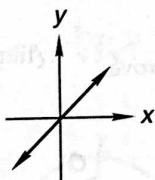
Sketch the graph of each function:

11.  $y = 7^x$

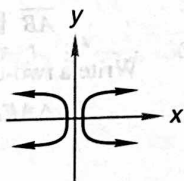
12.  $y = \left(\frac{1}{9}\right)^x$

13. Determine whether each graph represents the graph of a function. If so, determine whether the graph is a one-to-one function or not.

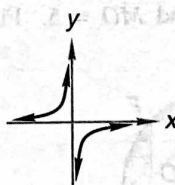
(a)



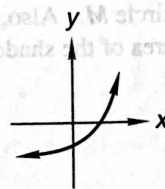
(b)



(c)



(d)

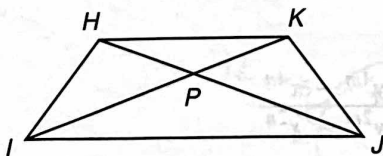


14. Erin has a total of 30 coins worth \$4.25. All of the coins are either nickels, dimes, or quarters. If the number of quarters is the same as the number of dimes, how many of each kind of coin does she have?

15. Given:  $\overline{HP} \cong \overline{KP}$   
 $\overline{IP} \cong \overline{JP}$

Write a two-column proof to prove:

$\triangle HPI \cong \triangle KPJ$



16. Solve:  $\begin{cases} x^2 + y^2 = 8 \\ x^2 - y^2 = 4 \end{cases}$

17. Simplify:  $(a - b)(a^{-1}b + ab^{-1})^{-1}$

18. Draw reference triangles to evaluate  $\frac{\sqrt{3}}{2} \tan 30^\circ + \sqrt{3} \sin 60^\circ - \sqrt{2} \cos 45^\circ$ . Do not use a calculator.

19. A sphere has a volume of  $288\pi$  cubic feet. Find the surface area of the sphere.

20. How much water should be added to 89 liters of a 45% saccharine solution to get a 40% saccharine solution?

# test 6

~~985~~ **99**

FIX 7

1145

1  $T+U=15$   
 $100+T-27=10T+U$   
 $9U-27=9T$   
 $9(15-T)-27=9T$   
 $135-9T-27=9T$   
 $108=18T$   
 $T=6$   
 $U=9$   
 $TU=6 \cdot 9$   
 $UT=96$

5  $f(x) = x^2 + 2x - 6$   
 $f(-4) = (-4)^2 - 8 - 6$   
 $f(-4) = 16 - 14$   
 $f(-4) = 2$   
 $f(8) = 8^2 + 16 - 6$   
 $f(8) = 64 + 10$   
 $f(8) = 74$

8  $f = \text{EXTR} | x \geq -5 \frac{3}{4}$   
 $g = \text{EXTR} | x \neq 3, x \neq -3 \frac{3}{4}$

9  $7x - 14 = 2$   
 $38 \frac{3}{4} - 12$

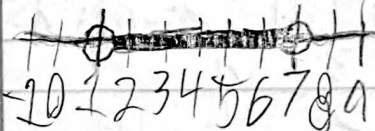
7 COS(38)  $x = -5.52$   
 75 SIN(38)  $y = -4.31$  😊

$-5.52 \uparrow -4.31 \uparrow$

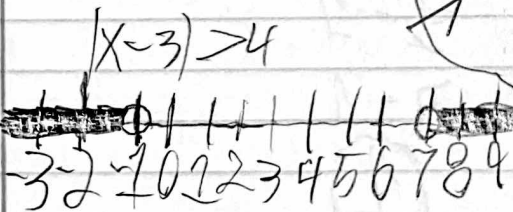
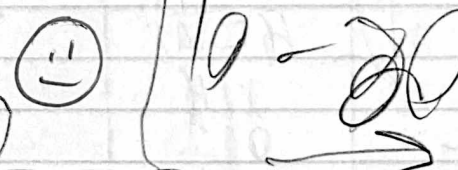
6  $125P^3B^6 - 216K^9$   
 $(5PB^2 - 6K^3)^3$

$(5PB^2 - 6K^3)(25P^2B^4 + 30PB^2K^3 + 36K^6)$

2 a, c, d  
 $k = 4k^3$



$X^{4B} = 4^{4C}$   
 $(X^{2B} + 4^{2B})(X^{2B} - 4^{2B})$   
 $(X^{2B} + 4^{2B})(X^B + 4^B)(X^B - 4^B)$



7  $V_1 = \frac{4}{3}\pi r^3 \cdot \frac{1}{2}$   
 $V_2 = \pi r^2 h$   
 $V_3 = \frac{1}{3}\pi r h$   
 $\frac{1}{3}\pi r^2 h$   
 $V_1 = \frac{4}{6} \cdot 5^3 = 125 \cdot \frac{2}{3} = \frac{250}{3}$   
 $V_2 = 25 \cdot 8 \cdot \pi = 200\pi = V_2$   
 $V_3 = 25 \cdot 5 \cdot \frac{1}{3} = \frac{125}{3}\pi$

Volume is always 3 power area always two

$5^2 + h^2 = 5\sqrt{2}^2$   
 $25 + h^2 = 50$   
 $h = 5$

$-\frac{1}{2}$

4  $25 + 144 = 169 = 13^2$   
 $\tan^{-1} \frac{12}{5} = 67.38$   
 $13 / 67.38$   $13 / 292.67$   
 $13 / 247.38$   $13 / 112.67$

$\frac{250}{3}\pi + 200\pi + \frac{125}{3}\pi$

$\frac{375}{3}\pi + \frac{600}{3}\pi$

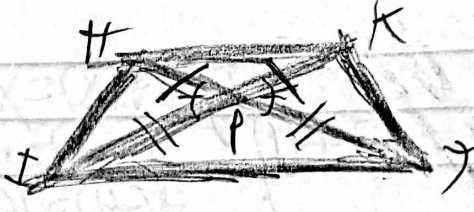
$\frac{975}{3}\pi = V = 325\pi = V$

pp test

10  $5x^{4n+2} + 15x^{2n+1}$  15

$5x^{2n+1} \cdot x^{2n+1} + 3 \cdot 5x^{2n+1} \cdot x^2$

$5x^{2n+1}(x^{2n+1} + 3)$



$\overline{HP} = \overline{KP}$  Given  
 $\overline{JP} = \overline{JP}$  Given  
 $\overline{HP} = \overline{JP}$  same  
 $\overline{IK} = \overline{IK}$  same  
 $\angle HPI = \angle KPI$  alt inter angles  
 $\triangle HPI \cong \triangle KPI$  SAS

☺

11  $y = 7x$

x	y
0	7
1	7
-1	-7
-2	-14

16  $x^2 + y^2 = 9$   
 $x^2 - y^2 = 4$

---

$2x^2 = 13$   
 $x^2 = 6.5$   
 $6 - y^2 = 4$   
 $-y^2 = -2$   
 $y^2 = 2$

19  $\frac{\sqrt{3} \sin 30 + \sqrt{3} \sin 60}{2} = \sqrt{2} \cos 45$

$\frac{\sqrt{3} \cdot \frac{1}{2} + \sqrt{3} \cdot \frac{\sqrt{3}}{2}}{2} = \frac{\sqrt{2} \cdot 1}{\sqrt{2}}$   
 $\frac{1}{2} + \frac{3}{2} = 1$   
 $2 = 1$

12  $y = (\frac{1}{4})x$

x	y
0	1
2	1/2
-1	1/4
2	1/2

$x = \pm \sqrt{6}$   
 $y = \pm \sqrt{2}$

☺

- 14 a 7 10 7 f
- b 10
- c 7 10 7 f
- d 7

14  $n + d + q = 30$   
 $5n + 10d + 25q = 425$   
 $q = d$

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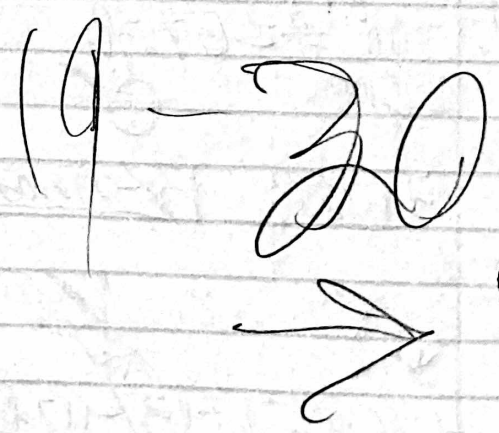
$-5n - 10q = 150$   
 $5n + 35q = 425$

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$25q = 275$   
 $q = 11$   
 $d = 11$   
 $n = 8$

17  $(a-b)(a^2 + ab + b^2)$

$(a-b) \left( \frac{1}{\frac{b}{a} + \frac{a}{b}} \right)$   
 $(a-b) \left( \frac{1}{\frac{b^2 + a^2}{ab}} \right)$   
 $(a-b) \left( \frac{ab}{b^2 + a^2} \right)$   
 $\frac{a^2b - b^2a}{b^2 + a^2}$



$$19 \quad V = \frac{4}{3}\pi r^3 \quad V = 288\pi$$

$$SA = 4\pi r^2$$



$$\frac{288\pi}{4} = \frac{4}{3}\pi r^3 \quad \frac{288}{4} = \sqrt[3]{216} = 6 = r$$

$$4 \cdot 36\pi = (144\pi = SA)$$

$$20 \quad W + 84 = (W + 84)$$

$$2W + .55(84) = .60(W + 84)$$

$$W + 48.95 = .60W + 53.4$$

$$.4W = 4.45$$

$$(W = 11.125)$$

12:43

58min