



1. $\frac{3\sqrt{3}}{25}$

2. $\frac{x^2 + 5x + 25}{x + 5}$

3. $x - \sqrt{3}y - 2\sqrt{3} + 15 = 0$

4. $-5 \leq y \leq 3$ (or interval notation: $[-5, 3]$)

5. 4

6. $\frac{4\sqrt{3}}{3}$

7. $-3 \leq x < 0$ or $x > 6$ (in interval notation: $[-3, 0) \cup (6, \infty)$)

8. $3b - a - 1$

9. 7500

10. 4.25

11. $\frac{24}{5} + \frac{-8}{5}i = 4.8 - 1.6i$

12. 200

13. $54432 x^{12} b^{24}$

14. $3\sqrt{3}$

15. Area changed by 4%



Question 1

$$r = \frac{25}{2}, a = \frac{\sqrt{3}}{4} \left(\frac{25\pi}{3} \right)^2, d = \frac{25\pi\sqrt{2}}{4} \quad \frac{d^2}{ar} = \frac{(25\pi\sqrt{2})^2}{16} \cdot \frac{36}{\sqrt{3}(25\pi)^2} \cdot \frac{2}{25} = \frac{3\sqrt{3}}{25}$$

Question 2

$$S = \frac{(x-5)(x^2+5x+25)}{x+5}, C = \frac{(x-1)(x+5)}{(x+1)(x-1)^2(x^2+x+1)}, U = \frac{(x^2+x+1)(x^2-1)}{(x+5)(x-5)}$$

$$CSU = \frac{x^2+5x+25}{x+5}$$

Question 3

Incline $30^\circ \rightarrow m = \frac{1}{\sqrt{3}}$; $y_2 = \sqrt{3}(x+5) - 2 \rightarrow y$ -intercept $= -2 + 5\sqrt{3}$ Our line: $x - \sqrt{3}y - 2\sqrt{3} + 15 = 0$

Question 4

Range of $g(x)$: $y \geq -5$, Range of $f(x)$: $y \leq 3$

Range of $(f \cap g)(x)$: $-5 \leq y \leq 3$

Question 5

Radius inscribed circle = $(\text{Area } \Delta) / (\text{semi-perimeter } \Delta)$ Area $\Delta = rs = (2\sqrt{6})(32) = 64\sqrt{6}$

Question 6

$$A = i^{-8}, i^{-8} = \frac{1}{i^8} = \frac{1}{i^4 \times i^4} = \frac{1}{1 \times 1} = 1$$

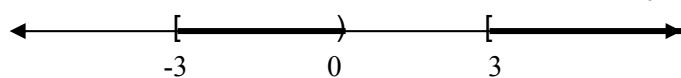
$B =$ The product of the roots of the polynomial $ax^2 + bx + c$ is c/a . In this case the product of the roots is

$$C = \log_B 5 + \log_B \frac{81}{5} = \log_3 5 + \log_3 \frac{81}{5} = \log_3 \left(5 \times \frac{81}{5} \right) = \log_3 81 = 4.$$

$$D = \frac{B}{1 - \frac{A}{C}} = \frac{3}{1 - \frac{1}{4}} = \frac{3}{\frac{3}{4}} = 4 \quad \text{Answer} = 4$$

Question 7

B:



Intersection $-3 \leq x < 0$ or $x > 6$

Question 8

$$c = (2 \log 3 + \log 7 - 2) + (\log 3 + 1 - 2 \log 7) = 3 \log 3 - \log 7 - 1 = 3b - a - 1$$



Question 9

$$m = \frac{kd}{e^2} \text{ or } \frac{m_1 e_1^2}{d_1} = \frac{m_2 e_2^2}{d_2} \rightarrow \frac{25(20^2)}{10} = \frac{m_2(2^2)}{30} \rightarrow \text{moose} = 7500$$

Question 10

(A) $P(E \text{ and } C) = P(E) + P(C) - P(E \text{ or } C)$ (B) $(0.4)(0.7) \neq 0.25$ neither M.E. or Independent = 4
 $= 0.4 + 0.7 - 0.85$
 $= \underline{0.25}$

$a + b = 4.25$

Question 11

$$B = 0 \rightarrow \frac{A+B}{CD} = \frac{16+0}{\left(\frac{1-3i}{5}\right)(5i)} = \frac{24}{5} + \frac{-8}{5}i = 4.8 - 1.6i$$

Question 12

$5x + 2y = 120$
 $3x - 2y = 40$ $x = 20, y = 10$ $xy = 200$

Question 13

$G = \text{Middle term of } (2x^2 - 3b^4)^{12} \equiv \binom{12}{6} (2x^2)^6 (-3b^4)^6 = 43,110,144x^{12}b^{24}$

$H = \binom{12}{7} = 792$ $G/H = 54432 x^{12}b^{24}$

Question 14

$$\frac{\sqrt{6}}{2} \cdot \frac{3\sqrt{2}}{1} = \frac{6\sqrt{3}}{2} = 3\sqrt{3}$$

Question 15

Area of rectangle = LW
 Area of new rectangle = $(1.2L)(.8W) = .96LW$. Area decreased 4%