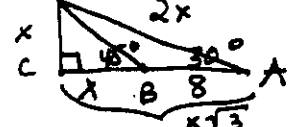


1. $5 - \sqrt{2} + 5 + \sqrt{2} = 10 = -b/a$; $(5 - \sqrt{2})(5 + \sqrt{2}) = 23 = c/a$; $a = -1, b = -10, c = 23$ $b+c = 13$ **A**

2. $A = rs$; $12 \cdot 7 = r \cdot 28$; $r = 3$ **E**

3. $\tan(x+y) = \sqrt{3}$; $x+y = \pi/3$; $\sin y = 1/2$ and $y = \pi/6$; $x = \pi/6$ **B**

4. $\frac{4}{5} \cdot \frac{5}{13} + \frac{3}{5} \cdot \frac{12}{13} + \frac{3}{5} \cdot \frac{5}{13} - \frac{4}{5} \cdot \frac{12}{13} = \frac{23}{65}$ **A** or **E**



5.  $8 + x = x\sqrt{3}$ $x = \frac{8}{\sqrt{3}-1}$ $A = \frac{1}{2} \cdot \frac{8}{\sqrt{3}-1} \cdot \frac{8}{\sqrt{3}-1} = \frac{32}{4-2\sqrt{3}} = \frac{16}{2-\sqrt{3}} = 16(2+\sqrt{3})$ **C**

6. $\frac{10}{13} \cdot \frac{3}{12} = 5/26$ **A**

7.  $V = \frac{1}{3}Bh$; $V = \frac{1}{3} \cdot 144(6\sqrt{2}) = 288\sqrt{2}$ **A** $h = 6\sqrt{3}$ $h = \sqrt{108-36} = \sqrt{72} = 6\sqrt{2}$

8. $4 \odot a = \frac{16+a}{4-a^2} = 4$; $16+a = 16-4a^2$; $4a^2+a = 0$; $a(4a+1) = 0$; $a = -1/4$ **B**

9. $\frac{1}{1-x} = 4$; $1 = 4-4x$; $-3 = -4x$; $x = 3/4$ **B**

10.  $C = \frac{1}{2} \cdot 12\pi = 6\pi$  $2\pi r = 6\pi$ $r = 3$ $h^2 = 36 - 9$; $h = 3\sqrt{3}$ **C**

11. $\sin a \cos b - \cos a \sin b = \cos a \sin b$; $\sin a \cos b = 2 \cos a \sin b$; $\tan a = 2 \tan b$; $\tan a = \sqrt{5}$

12. Π is false because $A - \emptyset = A$ **B**

$a = 66^\circ \pm 180^\circ k$ **D**

13. $a_n = n \frac{\pi}{2} + \frac{\pi}{8}$; $A_1 = (\cos(\frac{\pi}{2} + \frac{\pi}{8}), \sin(\frac{\pi}{2} + \frac{\pi}{8}))$; $A_5 = (\cos(\frac{5\pi}{2} + \frac{\pi}{8}), \sin(\frac{5\pi}{2} + \frac{\pi}{8}))$ **D**

14. $\frac{|x+y+1|}{\sqrt{2}} = \sqrt{(x+2)^2 + (y+1)^2}$; $\frac{(x+y+1)^2}{2} = x^2 + 4x + 4 + y^2 + 2y + 1$; $x^2 + 2xy + y^2 + 2x + 2y + 1 = 2x^2 + 2y^2 + 8x + 4y + 10$; $x^2 + y^2 - 2xy + 6x + \dots$ **D**

15. $\log_{10}(100x^2) - \log_{10} x^4 = \log_{10} \frac{100x^2}{x^4} = \log_{10} \frac{100}{x^2} = \log_{10} (\frac{10}{x})^2 = 2 \log_{10} \frac{10}{x}$ **D**

16. $(2,2)$ is above all 3 lines **D**

17. $x < x^2 + 8$ and $x^2 + 8 \leq 5x + 2$ and $x < 5x + 2$; $x^2 - x + 8 > 0$ and $x^2 - 5x + 6 \leq 0$ and $x < 5x + 2$ **E**

18. $-\frac{4y}{3} = -7x + \frac{7}{16}$; $-4y = -21x + \frac{7}{4}$; $y = \frac{21}{4}x - \frac{7}{16}$ $\frac{-441}{256} = \frac{21}{4}(\frac{-21}{64})$ **D**

19. $\frac{7+x}{15-x} \geq 0$; $\frac{x+7}{x-15} \leq 0$; $-7 \leq x < 15$ **A**

20. $f(\frac{2}{2}) = f(1) = 1 - 2 + 1 - 7 = -7$ **C** $[g(\frac{1}{2}) = \frac{1}{2} = \frac{\frac{1}{2} + 3}{3/2} - \frac{1}{2} = \frac{25}{12} - \frac{1}{2} = 2]$

