1) $(4+\sqrt{3})^2 - 8(4+\sqrt{3}) + 16 =$

$= \cancel{16} + 8\sqrt{3} + 3 - \cancel{32} - 8\sqrt{3} + \cancel{16} =$

$= 3$ (A)

2) $\left(\frac{5}{9}\right)^{70}\left(\frac{5}{9}\right)^{-60} = \left(\frac{5}{9}\right)^{10}$ (C)

3) $(4\log 8 - 9\log 4)(4\log 8 + 9\log 4) =$

$= (12\log 2 - 18\log 2)(12\log 2 + 18\log 2) =$

$= \left(\log \frac{2^{12}}{2^{18}}\right)(30\log 2) =$

$= (\log 2^{-6})(30\log 2) =$

$= (-6\log 2)(30\log 2) =$

4) (C)

5) a) $2021x - 2021 + 2 > 2020x - 4040 + 1$

$x + 2018 > 0$

$x > -2018$

c)

$x < -2018$ (C)

6) $\left(\left(\left(1000 + 1{,}25\%\right)1{,}25\right)1{,}25\right)1{,}25 - 1y$ (C)

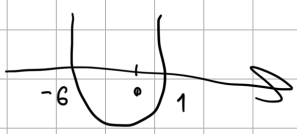
7) (C)

8) $\sqrt{x^2+5x-6} \neq 0 \wedge x^2+5x-6 \geq 0$

$x^2 + 5x - 6 \geq 0$

$\Delta = 25 - 4(1)(-6) = 49; \sqrt{\Delta} = 7$

$x_1 = \frac{-5-7}{2} = -6; \quad x_2 = \frac{-5+7}{2} = 1$



(D)

9) $p = -\frac{-b}{\frac{2}{3}} = \frac{b}{\frac{2}{3}} = 4\left(\frac{3}{2}\right) = 6$ (B)

10)

$5 - 4(-3)(c) = 0$

$5 + 12c = 0$

$12c = -5$

$c = -\frac{5}{12}$ (C)

11) $(-1,-1)$ $(1,3)$

$3 = a + b$

$a = 3 - b$

$-1 = -1(3-b) + b$

$-1 = -3 + b + b$

$2 = 2b$ (C)

$b = 1$

$\Rightarrow a = 2$

12)

13) $x < \frac{1}{3} + \frac{5x-9}{7} \quad / \cdot 21$

$21x < 7 + 15x - 27$

$6x < -20$

$x < -3\frac{1}{3}$ (A)

14) $16 = (-2)(2)$ (C)

15) $a_6 = -3 \; ; r = 5$

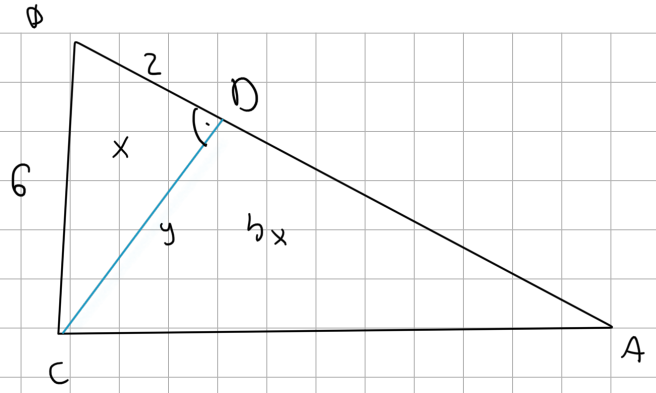
$-3 = a_1 + 25$

$a_1 = -28$

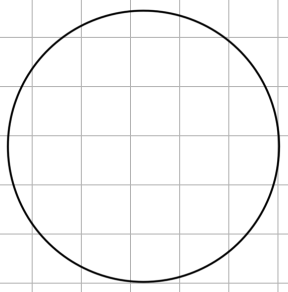
$(-28 \cdot 3) + 5 \cdot 2 + 5 \cdot 8 + 5 \cdot 14 = -84 + 50 + 70 =$

$= 36$ (C)

16)



17)



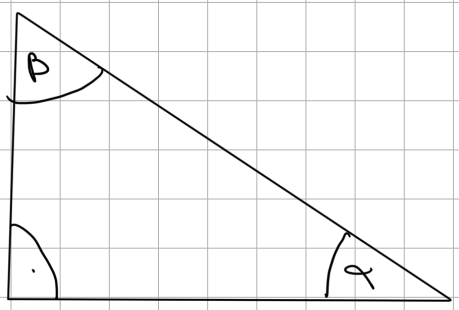
$$\frac{70}{180} = \frac{130}{x^\circ}$$

(B)

18) $\left(\frac{1}{2\sqrt{2}}\right)^{-\frac{1}{3}} = \left(\frac{2\sqrt{2}}{1}\right)^{\frac{1}{3}} = \left(2\sqrt{2}\right)^{\frac{1}{3}} = \left(2\cdot 2^{\frac{1}{2}}\right)^{\frac{1}{3}} = \left(2^{\frac{3}{2}}\right)^{\frac{1}{3}} = 2^{\frac{3}{6}} = 2^{\frac{1}{2}}$

$= \sqrt{2}$ (A)

19)



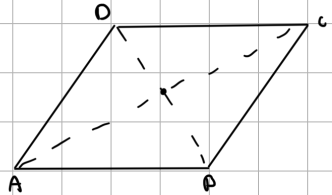
$\alpha + \beta = 90^\circ$

(A)

20) $S(BC)\ (h, 0)$

$|AS(BC)| = \sqrt{(h+3)^2 + (0-2)^2} = \sqrt{7^2 + h} = \sqrt{53}$ (D)

21)



$A(-3,8)$

$C(1,h)$

$(1, 6)$

$h = a + b$

$h - a = b$

$8 = -3a + h$

$h = -h a$

$a = -1$

$6 = m - \frac{7}{5}$

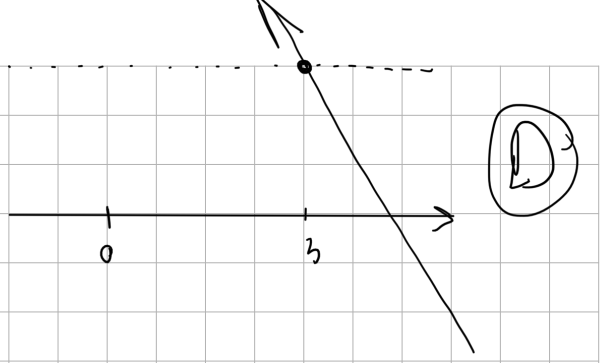
$6 + \frac{7}{5} = m$

22) $y=3$ $\quad 3 = -\frac{3}{5}x + 6 \quad /\cdot 5$

$15 = -3x + 30$

$-15 = -3x$

$x = 5$



(D)

$x = 5 \quad y = -\frac{3}{5}(5) + 6$

$5y = -\frac{15}{5} + 6 \quad /\cdot 5$

$5y = -15 + 30$

$5y = -9$

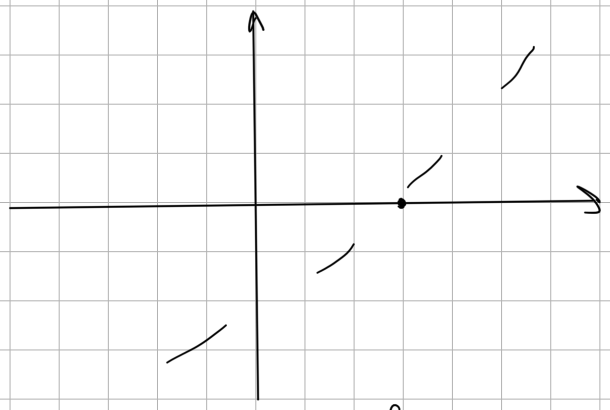
$y = -\frac{9}{5}$

24) $a_1 = 1002$; $r = 3$

$a_{340} = 1002 + (339)3 = 2019$

(C)

25)



$0 = (-3)(-3) + b$

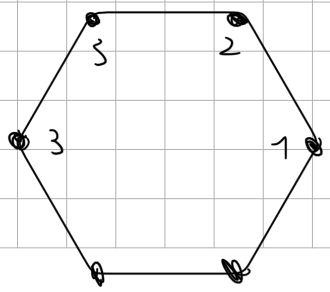
$b = -9$

$y = -9$

(A)

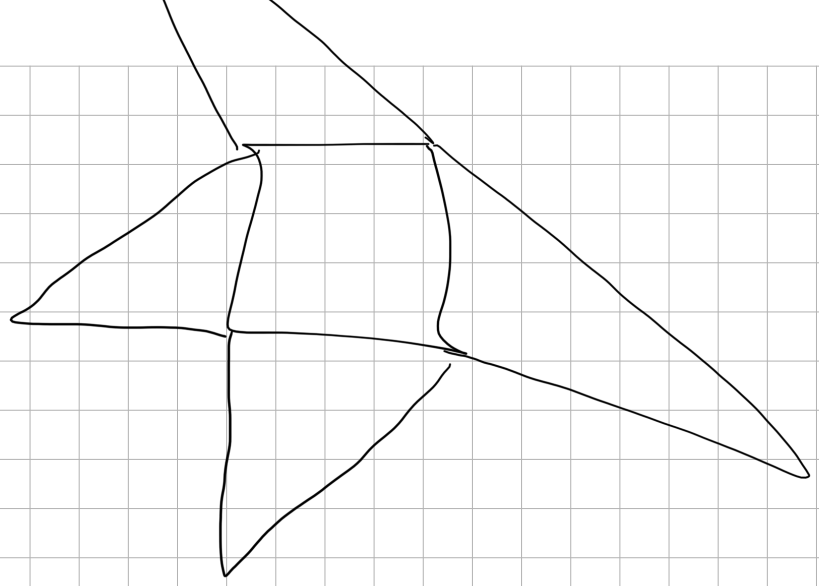
26) (D)

27)



(D)

28)



D)

29) $x^2 - 9 = 0 \quad \vee \quad x^2 + 3x = 0$

$x^2 = 9 \quad \vee \quad x(x+3) = 0$

$x = 3 \vee x = -3 \quad \vee \quad x = 0 \vee x = -3$

30) $\frac{\sin\alpha}{\sin\alpha - \cos\alpha} + \frac{\cos\alpha}{\sin\alpha - \cos\alpha} = \frac{1}{\sin\alpha}$

$\frac{1}{\sin\alpha} - \operatorname{tg}\alpha + \frac{\cos\alpha}{\sin\alpha} - 1 = \frac{1}{\sin\alpha}$

$\frac{1+\cos\alpha}{\sin\alpha} - \operatorname{tg}\alpha - 1 = \frac{1}{\sin\alpha}$

$\frac{\sin\alpha}{\sin\alpha} - \operatorname{tg}\alpha - 1 = \frac{1}{\sin\alpha}$

$-\operatorname{tg}\alpha = \frac{1}{\sin\alpha}$

$\operatorname{tg}\alpha = -\frac{1}{\sin\alpha}$

31) $\sqrt{36+4} = \sqrt{40} = \sqrt{8 \cdot 5} = 4\sqrt{5}$

$4\sqrt{5} = a\sqrt{2} \;/ : \sqrt{2}$

$\frac{4\sqrt{5}}{\sqrt{2}} = a$

$\frac{4\sqrt{2}\sqrt{5}}{\sqrt{2}\sqrt{2}} = \frac{4\sqrt{10}}{2} = 2\sqrt{10}$

$\text{obw}\,\square = 4(2\sqrt{10}) = 8\sqrt{10}$

32) $2ac^2 + 4abcd + 6bdac + 36d - 9abcd \geq 0$

$2ac^2 + 5abcd + 36d - 9abcd \geq 0$

$2ac^2 - 4abcd + 36d \geq 0$

$2(ac)^2 + 6d(3 - 4ac) \geq 0$

$(ac - 26d)^2 = (ac)^2 - 4abcd + 4(6d)^2$

$(ac - 26d)^2 + (ac)^2 + 36d - 4(6d)^2 \geq 0$

$(ac - 26d)^2$ ■

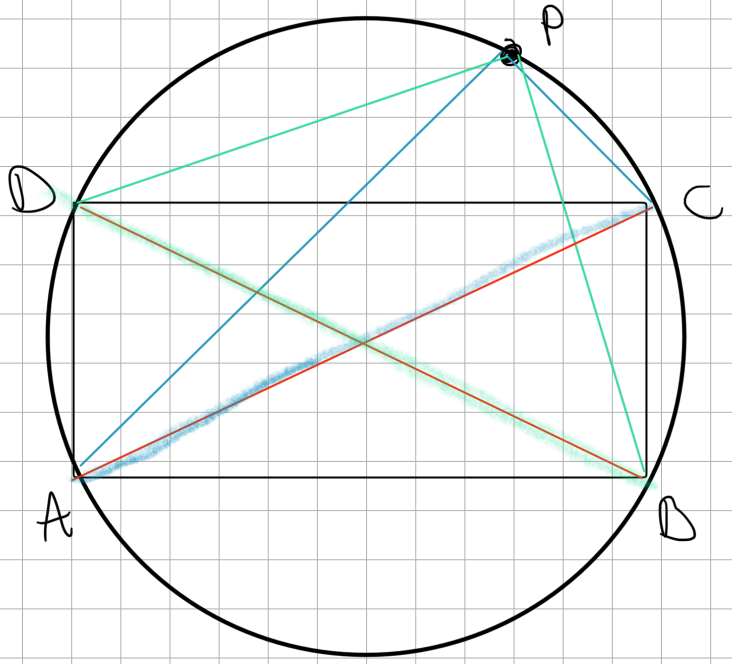
33) $\lfloor \lfloor 7b ; 2C \rfloor + nb \rfloor$

$n = 33$

$\frac{40}{42} = \frac{20}{21}$

b

34)



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