

Alg 2 Individual solutions

Regional

Jan 11, 1992

① $2 + 8(2 \cdot 3^2 \div 6) - 10 + 6$
 $2 + 8(3) - 10 + 6$
 $26 - 10 + 6 = 22$ b

② (a) $f(g(\frac{1}{2}))$
 $2 - (\frac{1}{2})^2$
 $2 - \frac{1}{4} = \frac{3}{4}$ c

③ $(x-y)(x+y+1)$
 $x^2 + xy + x - xy - y^2 - y$
 $x^2 + x - y - y^2$ c

④ $100n = 308. + \frac{94}{9}$
 $n = \frac{3,084}{99}$
 $\frac{99n}{99} = \frac{305.4}{990} = \frac{509}{165}$ d

⑤ $\frac{n+1}{3 \cdot 3} \cdot \frac{2n-4}{2(n-2)} = \frac{3n-3}{3^{n+3}} = 3 = \frac{2n-6}{3}$ c

⑥ $f(x) = \frac{(x+3)(x-3)}{x(x-3)}$ $x \neq 0$ d

⑦ $3 \mid \begin{array}{r} 1 \quad -5 \quad k \quad 24 \\ \quad \quad 3 \quad -6 \quad -24 \\ \hline 1 \quad -2 \quad -8 \quad 0 \end{array}$ $k + -6 = -8$
 $k = -2$ b

⑧

	#	Value
Pennies	$N+1$	$n+1$
Nickels	N	$5N$
Dimes	$N-1$	$10N-10$
		$16N-9, b$

⑨ $3y-2 = 2y+2-4+y$
 $3y-2 = 3y-2$
 Identity
 all reals, d

⑩ $2 + \frac{1}{4 + \frac{1}{6 + \frac{1}{8}}}$
 $6\frac{1}{8} = \frac{49}{8}$
 $4 + \frac{8}{49} = \frac{204}{49}$
 $2 + \frac{49}{204} = \frac{457}{204}$
 $\frac{204}{457}, b$

⑪

	1	2	3	4	5	6	7	8	
1	8x8
2									-main diag.
3									$\div 2$
4									
5									$\frac{64}{8}$
6									$\frac{-8}{2} = 56$
7									28 b
8									

⑫ $3x+2y=2$
 $-2(2x+y=3)$
 $3x+2y=2$
 $-4x-2y=-6$
 $-x=-4$
 $x=4$
 $2(4)+y=3$
 $y=-5$
 $4+(-5)=-1, b$

⑬ $3x-y=6$
 $m=3$
 $\perp y = -\frac{1}{3}x + 4$
 $3y = -x + 12$
 $x+3y=12, c$

⑭ $2x^2 - x^2 - 3x - 2 = 8$
 $x^2 - 3x - 10 = 0$
 $(x+2)(x-5) = 0$
 $-2, 5$
 $-2+5=3, c$

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15) $f[g(x)] = g[f(x)]$
 $x^2+2 = (x+2)^2$
 $x^2+2 = x^2+4x+4$
 $-\frac{2}{4} = \frac{4x}{4}$
 $-\frac{1}{2} = x$

1 value, C

16) $\frac{8 \cdot 7 \cdot 6 \cdot 5}{1 \cdot 2 \cdot 3 \cdot 4} x^4 y^4$

$-70x^4 y^4, d$

17)

$-2|x-4| + 3 = -7$

$-2|x-4| = -10$

$|x-4| = 5$

$x-4=5$ or $x-4=-5$
 $x=9$ $x=-1$

$9+1 = 8, c$

18) $2x^2+7x-15=0$
 $x^2+\frac{7}{2}x-\frac{15}{2}=0$

e) NOTA

19) $\frac{(3y+2)(y+4)}{(2y-1)(y+5)} \cdot \frac{(2y-1)(y+6)}{(3y+2)(y+6)}$

$\frac{y+4}{y+5}, c$

20)

$(.3)^2(.2) - (.3)(.2)^2$

$\frac{9}{100} \cdot \frac{2}{10} - \frac{3}{10} \cdot \frac{4}{100}$

$\frac{18}{1000} - \frac{12}{1000}$

$\frac{6}{1000}$ or $.006, c$

21) $(\sqrt{y^2-12})^2 = (y-6)^2$

$y^2-12 = y^2-12y+36$

$-48 = -12y$
 $4 = y$

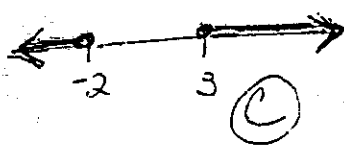
ck $\sqrt{4^2-12} = 4-6$
 $2 \neq -2$

No solution, d

22) $|1-2t| \geq 5$

$1-2t \geq 5$ or $1-2t \leq -5$

$-2t \geq 4$ $-2t \leq -6$
 $t \leq -2$ $t \geq 3$



23)

$5\%(250) + 0\%x = 3\%(250+x)$

$1250 = 750 + 3x$

$500 = 3x$

$\frac{500}{3} = x$

$166\frac{2}{3}$ mL, d

24) a) even + even = even +
 odd + odd = even T

b) even · odd · even = even
 odd · even · odd = even T

c) even + odd = odd T

d) even · odd = even F

25) $\frac{5}{\frac{10}{36}} = \frac{x}{54}$

$\frac{18x}{18} = \frac{5 \cdot 54}{18}$

$x = 15, c$

26) d (3,4)

at intersection

$4x + y = 16$

$-4x + 6y = 12$

$7y = 28$

$y = 4$

$4x + 4 = 16$

$4x = 12$

$x = 3$

27) $y = \frac{1}{3x+2}$

$x = \frac{1}{3y+2}$

$\frac{1}{x} = 3y+2$

$\frac{1}{3x} - \frac{2}{3} = \frac{3y}{3}$

$\frac{1-2x}{3x} = y, d$

28) $\begin{vmatrix} 2 & -3 & 1 \\ 3 & 5 & 2 \\ 1 & 0 & -3 \end{vmatrix} \begin{vmatrix} 2^7-3^7 \\ 3^5 \\ 1^5 \end{vmatrix}$

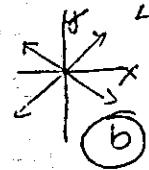
$-30 - 6 - 0 - (5 - 0 - 27)$

$-36 - 32$

$-68, b$

30) $|y| = |x|$

$\pm 1 \pm 1$
 $\pm 2 \pm 2$



b

29) Average rate = $\frac{\text{total dist}}{\text{total time}}$

$\frac{d}{40} + \frac{d}{60} = \frac{2d}{1} \cdot \frac{120}{5d} = \frac{240}{5} = 48 \text{ mph}, a$