KFUPM
Math001
11 Nov 06

NAME:
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QUIZ # 3 (C) / A

Please show your work, no grade is given for choice without the details.

1) The sum of the solutions of the equation $\left|\frac{3x}{2}-\frac{2}{3}\right|=1$ is

A) $\frac{10}{9}$ B) $\frac{12}{9}$ C) 0 D) $\frac{7}{6}$ E) $\frac{8}{9}$

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

LCD = 6. multiply by LCD

$9x-4=\pm 6$

$9x=10$ or $9x=-2$

$x=\frac{10}{9}$ $x=\frac{-2}{9}$

Sum $=\frac{8}{9}$

2) The solution for r of the equation $S=\frac{a-rl}{1-r}$ is

A) $\frac{a}{l}$

B) $\frac{a-S}{l-S}$

C) $\frac{a-S+Sr}{l}$

D) $\frac{a-1}{l-1}$

E) $\frac{rl-a+S}{S}$

$S=\frac{a-rl}{1-r}$

$S(1-r)=a-rl$

$S-Sr=a-rl$

$-Sr+rl=a-S$

$r(l-S)=a-S$

$r=\frac{a-S}{l-S}$

3) The perimeter of a rectangular garden is 112meters. The length is 4 meters less than twice the width, then the length is

A) 20 B) 28 *meters* C) 32 *meters.* D) 44 *meters.* E) 36 *meters.*

$P=2l+2w=112 \Rightarrow l+w=56$

$l=2w-4 \Rightarrow 2w-4+w=56$

$\Rightarrow 3w-4=56$

$3w=60 \Rightarrow w=20 \Rightarrow l=2w-4=40-4=36$

4) If we complete the square in $2x^2+4x=-6$ we get $(x+m)^2=l$, then $m+l$ *is equal to*

A) 6 B) -1 C) -3 D) 1 E) 2

$2x^2+4x=-6$

$\div 2$ $x^2+2x=-3$

$+4$ $x^2+2x+1=-3+1=-2$

$(x+1)^2=-2$

$m+l=1+(-2)=-1$

Code A

$2x^2+8x=-10$

$x^2+4x=-5$

$x^2+4x+4=-5+4$

$(x+2)^2=-1$

$m+l=2+(-1)=1$

5) The equation $\sqrt{3x+1}=\sqrt{x+4}+1$, has

A) Two solutions in $(-7,7)$

B) One solution in $(-7,1)$

C) Two solutions in $(-1,7)$

D) One solution in $(1,7)$

E) Two solutions in $(-1,7)$

$\sqrt{3x+1} = \sqrt{x+4} + 1$

Squaring

$3x+1 = (x+4) + 2\sqrt{x+4} + 1$

$3x+1-x-4-1 = 2\sqrt{x+4}$

$2x-4 = 2\sqrt{x+4} \quad \div 2$

$x-2 = \sqrt{x+4}$

$x^2-4x+4 = x+4$

$x^2-5x = 0$

$x(x-5)=0$

Check

$x=0$

$\sqrt{0+1} = \sqrt{0+4}+1$

$1 = 3$ false

$x=5$

$\sqrt{16} = \sqrt{9}+1$

$4 = 4$ True

$SS=\{5\}$

6) The solution set for $\frac{1}{x-1} \le \frac{2}{x+2}$ is

A) $[2,\infty)$

B) $(-\infty,-2)\cup[1,4)$

C) $(-\infty,-2]\cup[1,4]$

D) $(-2,1)\cup[4,\infty)$

E) $[-2,1]\cup[4,\infty)$

$\frac{1}{x-1} - \frac{2}{x+2} \le 0$

$\frac{x+2-2x+2}{(x-1)(x+2)} \le 0$

$\frac{-x+4}{(x-1)(x+2)} \le 0$

$\frac{x-4}{(x-1)(x+2)} \ge 0 \rightarrow \oplus$ or 0

x		-2		1		4	
$x-4$	$-$	$-$	$-$	$-$	0	$+$	
$x-1$	$-$	$-$	$-$	0	$+$	$+$	
$x+2$	$-$	0	$+$	$+$	$+$	$+$	
	$-$	$\cup$	$+$	$\cup$	$-$	0	$+$

$SS=(-2,1)\cup[4,\infty)$

7) The set of values of k for which the equation $x^2+kx=-k$ has one or two real solutions in x is

A) $[0,4]$

B) $(-\infty,-4]\cup[0,\infty)$

C) $(-\infty,0]\cup[4,\infty)$

D) $(-\infty,0)\cup(0,\infty)$

E) $(0,4)$

$x^2+kx+k=0$

1 or 2 real sol^{n}s

$\Rightarrow \Delta \ge 0$

$k^2-4k \ge 0$

$k(k-4) \ge 0 \rightarrow \oplus$ or 0

		0		4	
k	$-$	0	$+$		$+$
$k-4$	$-$		$-$	0	$+$
	$+$	0	$-$	0	$+$

$k \in (-\infty,0]\cup[4,\infty)$