Precalculus 11 – Flashback #1

1. In an arithmetic sequence, $t_1 = 10$ and $t_2 = 17.5$, what is t_{84}?

must find common difference

$d = t_2 - t_1$
$d = 17.5 - 10$
$d = 7.5$

$t_n = t_1 + (n-1)d$
$t_{84} = 10 + (84-1)(7.5)$
$t_{84} = 632.5$

2. Evaluate $6|-2-14|+9$

$6|-16|+9$
$6(16)+9$
105

3. Solve $\sqrt{4x-1}+2=10$. What are the restrictions on x?

restrictions

$\sqrt{4x-1}$ must >0
$\therefore 4x-1 \geq 0$
$4x \geq 1$
$x \geq \frac{1}{4}$

Solve: $\sqrt{4x-1}+2=10$
$\sqrt{4x-1} = 8$
$4x-1 = 64$
$4x = 65$
$x = \frac{65}{4}$

check that its not an extraneous root

4. Factor: $6x^2+11x-21$

1-6
2-3

1-21
3.7

$(x+3)(6x-7)$
$18x$
$-7x$

Precalculus 11 – Flashback #1

5. Given: 10, -5, 2.5, ... Determine r.

$r = \frac{t_n}{t_{n-1}} = \frac{-5}{10}$ $r = -\frac{1}{2}$

Squares
4
9
16
25

6. Simplify: $\sqrt{162} = \sqrt{81 \cdot 2} = 9\sqrt{2}$

2 81

7. Rationalize: $\frac{6}{1+\sqrt{2}} \cdot \frac{1-\sqrt{2}}{1-\sqrt{2}}$ mult. by conjugate

$\frac{6-6\sqrt{2}}{1-\sqrt{2}+\sqrt{2}-\sqrt{4}} \rightarrow \frac{6-6\sqrt{2}}{1-2} \rightarrow \frac{6-6\sqrt{2}}{-1}$ Simplify

zero pair

$\Rightarrow -6+6\sqrt{2}$

8. Simplify: $(3\sqrt{2}-\sqrt{5})^2+\sqrt{2}(\sqrt{2}+3\sqrt{5})$

Why expand

Expand $(3\sqrt{2}-\sqrt{5})(3\sqrt{2}-\sqrt{5}) + \sqrt{2}(\sqrt{2}+3\sqrt{5})$

Evaluate $9\sqrt{4} - 3\sqrt{10} - 3\sqrt{10} + \sqrt{25} + \sqrt{4} + 3\sqrt{10}$

Collect like terms $18 - 3\sqrt{10} - 3\sqrt{10} + 5 + 2 + 3\sqrt{10}$

Simp $11 - 3\sqrt{10}$

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9. Solve: $x^2 + 8x - 10 = 9x$ $\longrightarrow x^2 - x - 10 = 0$

doesn't factor ... so either complete square or quadratic formula

Check discriminant

$a = 1$
$b = -1$
$c = -10$

$b^2 - 4ac$
$(-1)^2 - 4(1)(-10)$
$1 + 40$
$41 \rightarrow > 0$ ∴ there are roots to find

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$x = \frac{+1 \pm \sqrt{41}}{2}$$

10. What is the discriminant for the equation $2x^2 - 5x = 9$? What does it tell you about the roots for this equation?

$2x^2 - 5x - 9 = 0$ must make equation $= 0$

$a = 2$
$b = -5$
$c = -9$

$b^2 - 4ac$
$(-5)^2 - 4(2)(-9)$
$25 + 72$
97

Since > 0, it means there are 2 real roots for this equation (when graphing it will cross the x-axis at 2 points)