Precalculus 11 – Flashback #2

1. Evaluate: $\left(\frac{27}{48}\right)^{-3/2}$

negative exp. law → reciprocate base

$\rightarrow \left(\frac{48}{27}\right)^{3/2} \rightarrow \left(\frac{16}{9}\right)^{3/2}$ (simplify fraction)

fractional exp. law

$\rightarrow \sqrt{\left(\frac{16}{9}\right)^3} \rightarrow \left(\frac{4}{3}\right)^3 \rightarrow \frac{64}{27}$

2. Evaluate $2\sqrt[3]{8} - 4\sqrt[4]{16}$

$2 \cdot 2 - 4 \cdot 2$

$4 - 8$

-4

Think

$\sqrt[3]{2 \cdot 2 \cdot 2} = 2$

$\sqrt[4]{2 \cdot 2 \cdot 2 \cdot 2} = 2$

3. Solve $\sqrt{2x+7} - x = -4$. What are the restrictions on x?

restrictions on x: $2x + 7 \geq 0$, $2x \geq -7$, $x \geq -7/2$

$(2x+7)^2 = (x-4)^2$

$2x + 7 = x^2 - 8x + 16$

$0 = x^2 - 10x + 9$

$0 = (x-9)(x-1)$

$\therefore x = 9$ and $x = 1$

check

verify:

$\sqrt{2 \cdot 9 + 7} - 9 = -4$

$\sqrt{25} - 9 = -4$

$5 - 9 = -4$ ✓

$\sqrt{2 \cdot 1 + 7} - 1 = -4$

$\sqrt{9} - 1 = -4$

$3 - 1 \neq -4$

$x = 1$ extraneous

4. Factor: $6x^2 + 22x + 20$

$2(3x^2 + 11x + 10)$

$2(3x+5)(x+2)$

	$3x$	5
x	$3x^2$	$5x$
2	$6x$	10

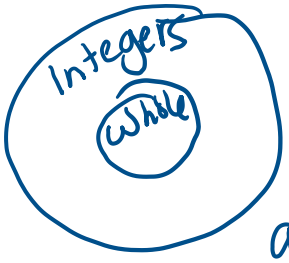
30
1·30
2·15
3·10
5·6

Precalculus 11 – Flashback #2

0, 1, 2, 3, 4

5. "All integers are whole numbers." True or False ? Explain how you know.

... −3, −2, −1, 0, 1, , 3 ...



False because whole #s are positive or zero

6. Simplify: $(2a^{-6}b^{4})^{-3}$

Power law

$2^{-3}a^{18}b^{-12}$

negative exp law

$\frac{a^{18}}{2^{3}b^{12}}$

evaluate coefficient

$\frac{a^{18}}{8b^{12}}$

7. Rationalize and reduce: $\frac{2\sqrt{8}-\sqrt{5}}{1+\sqrt{3}} \cdot \frac{1-\sqrt{3}}{1-\sqrt{3}}$ Conjugate!

$\frac{2\sqrt{8}-2\sqrt{24}-\sqrt{5}+\sqrt{15}}{1-\sqrt{9}}$

$\frac{4\sqrt{2}-4\sqrt{6}-\sqrt{5}+\sqrt{15}}{-2}$

$\frac{-4\sqrt{2}+4\sqrt{6}+\sqrt{5}-\sqrt{15}}{2}$

8. Given the function $2x^{2} - 5x + 9 = y$, describe what you know about this function based on the numbers in the equation.

ax^2 bx $+c$

Vertex has moved vertically & horizontally

$a=2$ → opens up

→ congruent to $y=2x^2$

→ stretch of 2

→ spacing x: −2, −6, −10

$c=9$ → y-int (0, 9)

Precalculus 11 – Flashback #2

9. Solve: $x^2 - 6x = -10$

$x^2 - 6x + 10 = 0$

$b^2 - 4ac$

$a=1$, $b=-6$, $c=10$

$(-6)^2 - 4(1)(10)$

$36 - 40$

-4

Doesn't factor ....> so check discriminant

Because discriminant is negative → No Solution

10. Simplify: $\sqrt{20x^5y^4}$ → $x \geq 0$, $y \in R$

$\sqrt{4 \cdot 5 \cdot x^2 \cdot x^2 \cdot x \cdot y^2 \cdot y^2}$ (Perfect Squares)

$2x^2y\sqrt{5xy}$