Algebra II

10-2
Real Number Exponents

Simplify. (pg 461)

1a) $3^{\sqrt{2}} \cdot 3^{\sqrt{2}}$

$3^{\sqrt{2}+\sqrt{2}}$

$3^{2\sqrt{2}}$

$9^{\sqrt{2}}$

1b) $\left(3^{\sqrt{2}}\right)^2$

$3^{2\sqrt{2}}$

$9^{\sqrt{2}}$

1c) $\left(3^{\sqrt{2}}\right)^{\sqrt{2}}$

3^2

9

1d) $\dfrac{3^{\sqrt{2}+2}}{3^{\sqrt{2}-2}}$

$3^{(\sqrt{2}+2)-(\sqrt{2}-2)}$

$3^{\sqrt{2}+2-\sqrt{2}+2} = 3^4 = 81$

Simplify.

3) $\left(10^{\pi}\right)^2$

$10^{2\pi}$

100^{π}

$e^{\pi i} + 1 = 0$

Solve.

19) $3^x = \frac{1}{27}$

$3^x = 3^{-3}$

$x = -3$

$\{-3\}$

bases don't cancel

we just ignore them

$3^x = 9$

$\{2\}$

$3^x = 7$

27) $25^{2x} = 5^{x+6}$

$(5^2)^{2x} = 5^{x+6}$

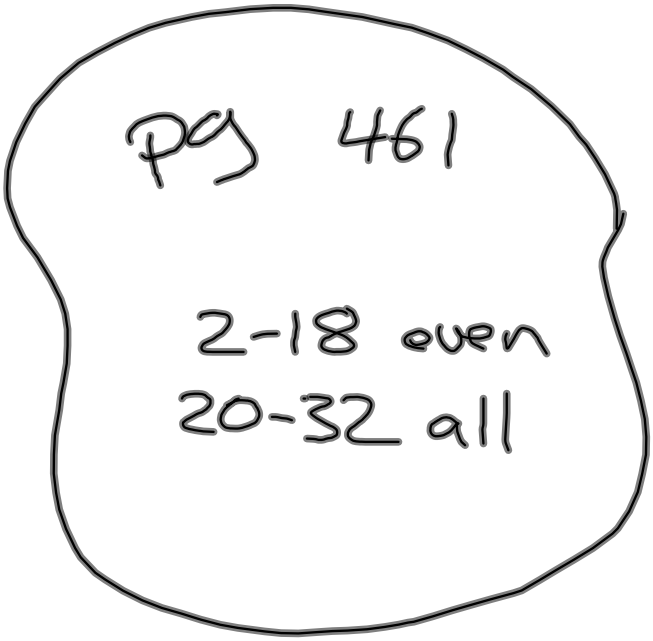
$5^{4x} = 5^{x+6}$

$4x = x + 6$

$3x = 6$

$x = 2$

$\{2\}$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2-18 even
20-32 all