Bellwork Alg 2B Friday, September 29, 2017

Solve each.

1. $(2x-1)^{\frac{1}{3}} = (x+1)^{\frac{1}{6}}$

2. $\sqrt{24-4x} - x = -3$

3. $2 + \sqrt{3x^2 - 11} = x^2 - 3$

4. $(x^2y^3)^{\frac{1}{2}}(x^2y^3)^{\frac{1}{2}} = x^{\frac{a}{3}}y^{\frac{a}{2}}$

If the equation above, where a is a constant, is true for all positive values of x and y, what is the value of a?

A. 2 B. 3 C. 5 D. 6

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Answers

Solve each.

1. $\left[(2x-1)^{\frac{1}{3}}\right]^6 = \left[(x+1)^{\frac{1}{6}}\right]^6$

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

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

$4x^2 - 5x = 0$

$x(4x-5) = 0$

$x = 0, 5/4$

$x = \frac{5}{4}$

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

2. $\sqrt{24-4x} - x = -3$

$+x \quad +x$

$\left(\sqrt{24-4x}\right)^2 = (x-3)^2$

$24 - 4x = x^2 - 6x + 9$

$0 = x^2 - 2x - 15$

$0 = (x-5)(x+3)$

$x = 5, -3$

$x = 5$

-15: -5, $+3$; -2

3. $2 + \sqrt{3x^2 - 11} = x^2 - 3$

$-2 \quad -2$

$\left(\sqrt{3x^2-11}\right)^2 = (x^2-5)^2$

$3x^2 - 11 = x^4 - 10x + 25$

$0 = x^4 - 13x^2 + 36$

$0 = (x^2-9)(x^2-4)$

$0 = (x \pm 3)(x \pm 2)$

$x = \pm 3, \pm 2$

$x = \pm 3$

	x^2	-5
x^2	x^4	$-5x^2$
-5	$-5x^2$	$+25$

36: -9, -4; -13

4. $(x^2y^3)^{\frac{1}{2}}(x^2y^3)^{\frac{1}{2}} = x^{\frac{a}{3}}y^{\frac{a}{2}}$

If the equation above, where a is a constant, is true for all positive values of x and y, what is the value of a?

A. 2 B. 3 C. 5 D. 6

$(x^2y^3)^{\frac{1}{2}}(x^2y^3)^{\frac{1}{2}} = x^{\frac{a}{3}}y^{\frac{a}{2}}$

$(xy^{3/2})(xy^{3/2}) = x^{\frac{a}{3}}y^{\frac{a}{2}}$

$x^2y^3 = x^{\frac{a}{3}}y^{\frac{a}{2}}$

$3 = \frac{a}{2}$ $a = 6$

$2 = \frac{a}{3}$ $a = 6$