Name _____ Date _____ Pd _____

Algebra 2 –7.1, 7.2, 7.6 Test Review

Part I: Rewrite the following expressions into rational exponent notation or radical notation.

a) $\left(\sqrt[3]{x}\right)^4$ $x^{3/4}$

b) $\sqrt[5]{17}$ $17^{1/5}$

c) $x^{\frac{2}{5}}$ $\left(\sqrt[5]{x}\right)^2$

d) $x^{-\frac{4}{3}}$ $\dfrac{1}{\sqrt[3]{x}^{\,4}}$

e) $\left(\sqrt[3]{7}\right)^4$ $7^{4/3}$

Part II: Evaluate the following expressions.

a) $\sqrt[3]{-27}$ $= -3$

b) $36^{\frac{3}{2}}$ $\left(\sqrt{36}\right)^3 = (6)^3 = 216$

c) $49^{\frac{3}{2}}$

$\left(\sqrt{49}\right)^3 = 7^3$

$= 343$

d) $\sqrt[4]{16}$ $= 2$

e) $\left(\sqrt[3]{125}\right)^2$ $(5)^2 = 25$

Part III: Simplify the following expressions.

a) $\left(5^{\frac{1}{4}} \bullet 5^{\frac{3}{5}}\right)$

$5^{5/20} \cdot 5^{12/20} = 5^{17/20}$

b) $\sqrt[3]{16x^3y^5z^4}$

$2xyz\sqrt[3]{2y^2z}$

c) $3\sqrt[4]{3} + \sqrt[4]{162}$

$3\sqrt[4]{3} + 3\sqrt[4]{2}$

can't add

e) $\dfrac{x^{\frac{3}{5}}}{x^{\frac{1}{5}}}$ $x^{2/5}$

f) $(x^5)^{\frac{7}{10}}$ $x^{7/2}$

Part IV: Solve the following equations. Make sure to check for extraneous solutions.

a) $\sqrt[3]{x-18} = -6$

$x - 18 = (-6)^3$

$x - 18 = -216$

$x = -198$

b) $4x^{\frac{3}{4}} = 32$

$x^{3/4} = 8$

$x = 8^{4/3}$

$x = (\sqrt[3]{8})^4 = (2)^4 = 16$

c) $\sqrt{2x+32} = 3\sqrt{2x}$

$2x + 32 = 9(2x)$

$2x + 32 = 18x$

$32 = 16x$

$x = 2$

d) $x - 3 = \sqrt{4x}$

$(x-3)^2 = 4x$

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

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

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

$\cancel{x = 1}, 9$

extraneous.

e) $\sqrt{2x+20} = x + 6$

$2x + 20 = x^2 + 12x + 36$

$x^2 + 10x + 16 = 0$

$(x+2)(x+8) = 0$

$x = -2, \cancel{x = -8}$

extraneous.

f) $\sqrt[4]{32x} + 3 = 7$

$\sqrt[4]{32x} = 4$

$32x = 256$

$x = 8$

g) $3x^{\frac{2}{3}} - 1 = 26$

$3x^{2/3} = 27$

$x^{2/3} = 9$

$x = 9^{3/2} = (\sqrt{9})^3 = (3)^3 = 27$

h) $-(x-2)^{\frac{3}{2}} = -8$

$(x-2)^{3/2} = 8$

$x - 2 = 8^{2/3}$

$x - 2 = (\sqrt[3]{8})^2$

$x - 2 = 4$

$x = 6$

i) $\sqrt{5x-7} + 6 = 4$

$\sqrt{5x-7} = -2$

$5x - 7 = 4$

$5x = 11$

$x = \frac{11}{5}$ ✗ extraneous

j) $\sqrt[4]{4x-1} = \sqrt[4]{x+10}$

$4x - 1 = x + 10$

$3x = 11$

$x = 11/3$ ✓