(15) $\sqrt{3z-5}^2 = 5^2$

$3z - 5 = 25$

$3z = 30$

$z = 10$

CK: $\sqrt{3(10)-5} \stackrel{?}{=} 5$

$\sqrt{30-5} = 5$

$\sqrt{25} = 5$ ✓

(16) $3^3 = \sqrt[3]{12+5a}^3$

$27 = 12 + 5a$

$15 = 5a$

$3 = a$ ✓

We do not need to check when we exponentiate to odd powers

(17) $\sqrt{7y+3}^2 = -1^2$

$7y + 3 = 1$

$7y = -2$

$y = -2/7$

CK: $\sqrt{7(-2/7)+3} \stackrel{?}{=} -1$

$\sqrt{-2+3} = -1$

$\sqrt{1} \neq -1$

(18) $\sqrt{6b+1} - 2 = 0$

$\sqrt{6b+1}^2 = 2^2$

$6b + 1 = 4$

$6b = 3$

$b = 1/2$

CK: $\sqrt{6(1/2)+1} - 2 \stackrel{?}{=} 0$

$\sqrt{3+1} - 2 = 0$

$\sqrt{4} - 2 = 0$ ✓

(19) $\sqrt[5]{3-7x}^5 = -2^5$

$3 - 7x = -32$

$-7x = -35$

$x = 5$

(20) $\sqrt{5c^2-48}^2 = c\sqrt{2}^2$

$5c^2 - 48 = c^2 \cdot 2$

$3c^2 = 48$

$\sqrt{c^2} = \sqrt{16}$

$c = \pm 4$

$c = -4, 4$

CK: $\sqrt{5(4)^2-48} \stackrel{?}{=} 4\sqrt{2}$

$\sqrt{32} = 4\sqrt{2}$ ✓

$\sqrt{5(-4)^2-48} \stackrel{?}{=} -4\sqrt{2}$

$\sqrt{32} \neq -4\sqrt{2}$

(21) $\sqrt{3w^2+4} - 2 = w$

$\sqrt{3w^2+4}^2 = (w+2)^2$

$3w^2 + 4 = w^2 + 4w + 4$

$2w^2 - 4w = 0$

$2w(w-2) = 0$

$w = 0 \quad w = 2$

CK: $\sqrt{3(0)^2+4} - 2 \stackrel{?}{=} 2$

$\sqrt{4} - 2 = 2$

$2 = 2$ ✓

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

$\sqrt{16} - 2 = 2$

$4 - 2 = 2$ ✓

(22) $\sqrt{d^2-19} - 2d + 11 = 0$

$\sqrt{d^2-19}^2 = (2d-11)^2$

$d^2 - 19 = 4d^2 - 44d + 121$

$0 = 3d^2 - 44d + 140$

$0 = (3d - 14)(d - 10)$

$3d - 14 = 0 \qquad d - 10 = 0$

$d = 14/3 \qquad d = 10$

CK: $\sqrt{10^2-19} - 2(10) + 11 \stackrel{?}{=} 0$

$\sqrt{81} - 20 + 11 = 0$

$9 - 9 = 0$ ✓

$\sqrt{(14/3)^2-19} - 2(14/3) + 11 \stackrel{?}{=} 0$

$5/3 - 26/3 + 11 = 0$

$-21/3 + 11 = 0$

$-7 + 11 \neq 0$

(23) $\sqrt[3]{8v^2-6v} + 1 = 0$

$\sqrt[3]{8v^2-6v}^3 = -1^3$

$8v^2 - 6v = -1$

$8v^2 - 6v + 1 = 0$

$(4v - 1)(2v - 1)$

$v = 1/4 \quad v = 1/2$

(24) $e - 3\sqrt{e} = 10$

$(e-10)^2 = 3\sqrt{e}^2$

$e^2 - 20e + 100 = 9e$

$e^2 - 29e + 100 = 0$

$(e - 4)(e - 25) = 0$

$e = 4, 25$

CK: $4 - 3\sqrt{4} \stackrel{?}{=} 10$

$4 - 3(2) = 10$

$-2 \neq 10$

$25 - 3\sqrt{25} \stackrel{?}{=} 10$

$25 - 3(5) = 10$

$10 = 10$ ✓

(25) $u = 1/3\sqrt{6u-1}$

$3u^2 = \sqrt{6u-1}^2$

$9u^2 = 6u - 1$

$9u^2 - 6u + 1 = 0$

$(3u - 1)^2 = 0$

$u = 1/3$

CK: $1/3 \stackrel{?}{=} 1/3\sqrt{6(1/3)-1}$

$1/3 = 1/3\sqrt{2-1}$

$1/3 = 1/3\sqrt{1}$ ✓

(26) $8f = 1 - 2\sqrt{f}$

$2\sqrt{f}^2 = (1 - 8f)^2$

$4f = 1 - 16f + 64f^2$

$0 = 64f^2 - 20f + 1$

$0 = (4f - 1)(16f - 1)$

$f = 1/4, \ 1/16$

CK: $8(1/4) \stackrel{?}{=} 1 - 2\sqrt{1/4}$

$2 = 1 - 2(1/2)$

$2 \neq 1 - 1$

$8(1/16) \stackrel{?}{=} 1 - 2\sqrt{1/16}$

$1/2 = 1 - 2(1/4)$

$1/2 = 1 - 1/2$ ✓

(27) $5(t - 3\sqrt{t}) + 3 = 3(t + 1)$

$5t - 15\sqrt{t} + 3 = 3t + 3$

$2t^2 = 15\sqrt{t}^2$

$4t^2 = 225t$

$4t^2 - 225t = 0$

$t(4t - 225) = 0$

$t = 0 \quad t = 225/4$

CK: $5(0 - 3\sqrt{0}) + 3 \stackrel{?}{=} 3(0 + 1)$

$3 = 3$

$5(56.25 - 3\sqrt{56.25} + 3 \stackrel{?}{=} 3(56.25 + 1)$