Connect Four

6. $\frac{1}{\sqrt{3}+5}\cdot\frac{(\sqrt{3}-5)}{\sqrt{3}-5} = \boxed{\frac{\sqrt{3}-5}{-22}}$

22. $g(f(x))$ $\quad f(x)=3x+5$ $\quad g(x)=x^2+1$

$g(3x+5) = (3x+5)^2+1$

$= (3x+5)(3x+5)+1$

$= 9x^2+15x+15x+25+1$

$= 9x^2+30x+26$

1. $\sqrt[3]{400x^2y^6} = 20|x^1y^3|$

7. $\sqrt{63} + 2\sqrt{28} - 5\sqrt{7}$

$\sqrt{9}\sqrt{7}$ $\qquad$ $\sqrt{4}\sqrt{7}$

$\qquad\qquad\quad 2\cdot 2\sqrt{7}$

$3\sqrt{7} + 4\sqrt{7} - 5\sqrt{7} = \boxed{2\sqrt{7}}$

10. $a^{\frac{2}{3}}\cdot a^{\frac{1}{2}} = a^{\frac{2}{3}+\frac{1}{2}} = a^{\frac{4}{6}+\frac{3}{6}} = \boxed{a^{\frac{7}{6}}}$

$(a^{2/3})(a^{1/2})$

5. $(8-3\sqrt{2})(8+3\sqrt{2}) = 64-9\cdot 2$

$64-18 = \boxed{46}$

8. $\frac{\sqrt[4]{5}}{\sqrt[4]{4}}\cdot\frac{\sqrt[4]{4}}{\sqrt[4]{4}} = \boxed{\frac{\sqrt[4]{20}}{\sqrt[4]{16}}} = \boxed{\frac{\sqrt[4]{20}}{2}}$

$\sqrt[4]{4}$: $2\cdot 2$ $\qquad$ $\sqrt[4]{4}$: $2\cdot 2$

15. $\left(\sqrt{x^2-5}\right)^2 = 4^2$

$x^2 - 5 = 16$

$+5 \quad +5$

$\sqrt{x^2} = \sqrt{21}$

$\boxed{x = \pm\sqrt{21}}$

14. $(2x+1)^{\frac{1}{3}3} = 3^3$

$2x + 1 = 27$

$-1 \quad -1$

$\frac{2x}{2} = \frac{26}{2}$

$\boxed{x = 13}$

(9) $(-64)^{-\frac{2}{3}} = \frac{1}{(-64)^{2/3}} = \frac{1}{(\sqrt[3]{-64})^2} = \frac{1}{(-4)^2} = \frac{1}{16}$

$(-64)\wedge(-2/3)$

(12) $(8ab^2)^{-\frac{1}{2}}(8ab^2)^{\frac{1}{2}}$

$(8ab^2)^0 = 1$

(2) $\sqrt[3]{-125a^9} = -5a^3$

$25 \cdot 5$

$5 \cdot 5$

$aaa \cdot aaa \cdot aaa$

(13) $(s^{\frac{2}{5}} t^{\frac{1}{3}})(s^{\frac{1}{2}} t^{\frac{1}{2}})$

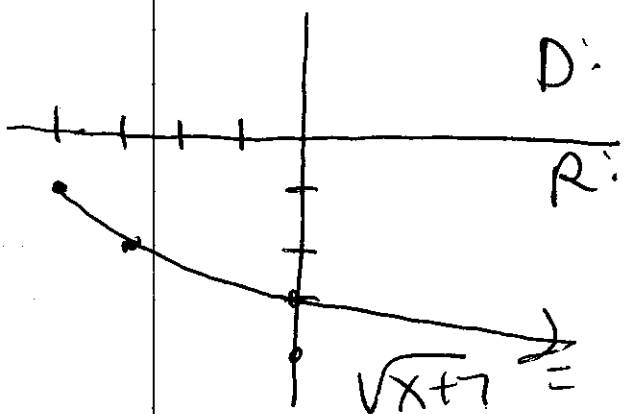
$s^{\frac{9}{10}} t^{\frac{5}{6}}$

(30) $y = -\sqrt{x+4} - 1$

$x+4 = 0$

D: $[-4, \infty)$

R: $(-\infty, -1]$



$\sqrt{x+7} = x+1$

(16) $(\sqrt{x+7})^2 = (x+1)^2$

$(x+1)(x+1)$

$x+7 = x^2+2x+1$

$-x \quad -7 \qquad -x \quad -7$

$0 = x^2 + x - 6$

$(x+3)(x-2)$

$x = -3$ extraneous

$x = 2$

(21) $f(g(x))$ $f(x) = 3x+5$ $g(x) = x^2+1$

$f(x^2+1) = 3(x^2+1)+5$

$= 3x^2+3+5$

$\boxed{f(g(x)) = 3x^2+8}$

$\frac{\sqrt[4]{5}}{\sqrt[4]{2}} \cdot \frac{\sqrt[4]{8}}{\sqrt[4]{2\cdot 2\cdot 2}}$