ANSWER PRESENTATION TOOL

Algebra 2 - Student Edit 5 5 - Practice 2-20 ALL EVEN Show Solu

ODD

2. $(f+g)(x) = f(x) + g(x) = \sqrt[3]{2x} - 11\sqrt[3]{2x} = -10\sqrt[3]{2x}$

The functions f and g each have the same domain: all real numbers. So, the domain of $f+g$ is all real numbers. When $x = -4$, the value of the sum is

$$(f+g)(-4) = -10\sqrt[3]{2(-4)}$$
$$= -10\sqrt[3]{(-8)} = (-10)(-2) = 20.$$

$$(f-g)(x) = f(x) - g(x)$$
$$= \sqrt[3]{2x} + 11\sqrt[3]{2x} = 12\sqrt[3]{2x}$$

The functions f and g each have the same domain: all real numbers. So, the domain of $f-g$ is all real numbers. When $x = -4$, the value of the difference is

$$(f-g)(-4) = 12\sqrt[3]{2(-4)} = 12(-2) = -24.$$

4. $(f+g)(x) = f(x) + g(x)$

$$= (11x + 2x^2) + (-7x - 3x^2 + 4)$$

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

The functions f and g each have the same domain: all real numbers. So, the domain of $f + g$ is all real numbers. When $x = 2$, the value of the sum is

$(f+g)(2) = -(2)^2 + 4(2) + 4 = 8.$

$(f-g)(x) = f(x) - g(x)$

$$= (11x + 2x^2) - (-7x - 3x^2 + 4)$$

$$= 5x^2 + 18x - 4$$

The functions f and g each have the same domain: all real numbers. So, the domain of $f - g$ is all real numbers. When $x = 2$, the value of the difference is

$(f-g)(2) = 5(2)^2 + 18(2) - 4 = 52.$

6. $(fg)(x) = (x^4)(3\sqrt{x}) = 3x^{9/2}$

The domain of f is all real numbers and the domain of g is $x \geq 0$. So, the domain of fg is $x \geq 0$. When $x = 4$, the value of the product is $(fg)(4) = 3(4)^{9/2} = 3(512) = 1536$.

$$\left(\frac{f}{g}\right)(x) = \frac{x^4}{3\sqrt{x}} = \frac{x^{7/2}}{3}$$

The domain of f is all real numbers and the domain of g is $x \geq 0$. So, the domain of $\frac{f}{g}$ is $x > 0$. When $x = 4$, the value of the quotient is $\left(\frac{f}{g}\right)(4) = \frac{4^{7/2}}{3} = \frac{128}{3}$.

8. $(fg)(x) = (11x^3)(7x^{7/3}) = 77x^{16/3}$

The functions f and g each have the same domain: all real numbers. So, the domain of fg is all real numbers. When $x = -8$, the value of the product is

$(fg)(-8) = 77(-8)^{16/3} = 77(65{,}536) = 5{,}046{,}272.$

$\left(\frac{f}{g}\right)(x) = \frac{11x^3}{7x^{7/3}} = \frac{11}{7}x^{2/3}$

The functions f and g each have the same domain: all real numbers. So, the domain of $\frac{f}{g}$ is $x \neq 0$. When $x = -8$, the value of the quotient is $\left(\frac{f}{g}\right)(-8) = \frac{11}{7}(-8)^{2/3} = \frac{11}{7}(4) = \frac{44}{7}.$

10. $(fg)(x) = (4x^{5/4})(2x^{1/2}) = 8x^{7/4}$

The functions f and g each have the same domain: $x \geq 0$. So, the domain of fg is $x \geq 0$. When $x = 16$, the value of the product is $(fg)(16) = 8(16)^{7/4} = 8(128) = 1024.$

$\left(\frac{f}{g}\right)(x) = \frac{f(x)}{g(x)} = \frac{4x^{5/4}}{2x^{1/2}} = 2x^{3/4}$

The functions f and g each have the same domain: $x \geq 0$. So, the domain of $\frac{f}{g}$ is $x > 0$. When $x = 16$, the value of the quotient is $\left(\frac{f}{g}\right)(16) = 2(16)^{3/4} = 2(8) = 16.$

12. Enter f and g. From the screen, you can see that $f(5) + g(5) \approx 245.62$, so $(f + g)(5) \approx 245.62$. Similarly, $(f - g)(5) \approx -40.94$, $(fg)(5) \approx 14{,}663.04$, $\left(\frac{f}{g}\right)(5) \approx 0.71.$

14. Enter f and g. From the screen, you can see that $f(5) + g(5) \approx 29.01$, so $(f + g)(5) \approx 29.01$. Similarly,

$$(f - g)(5) \approx -11.12, \quad (fg)(5) \approx 179.44, \quad \left(\frac{f}{g}\right)(5) \approx 0.45.$$

16. Because the functions have an even index, the domain is restricted; The domain of $(fg)(x)$ is $x \geq 0$.

18.
$$r(w) = \frac{1.1w^{0.734}}{b(w) - d(w)}$$
$$= \frac{1.1w^{0.734}}{0.007w - 0.002w}$$
$$= \frac{1.1w^{0.734}}{0.005w}$$
$$= \frac{220w^{0.734}}{w}$$

When $w = 6.5$: $r(6.5) = \dfrac{220(6.5)^{0.734}}{6.5} \approx 133.7$

When $w = 300$: $r(300) = \dfrac{220(300)^{0.734}}{300} \approx 48.3$

When $w = 70{,}000$: $r(70{,}000) = \dfrac{220(70{,}000)^{0.734}}{70{,}000} \approx 11.3$

20. B; A; The y-intercept in A is less than in B.