

Algebra 2 Honors Chapter 7 Test**Multiple Choice**

Identify the choice that best completes the statement or answers the question.

- _____ 1. Find $(f-g)(x)$ for the following functions.

$$f(x) = 12x + 15$$

$$g(x) = -20x^2 + 2x + 30$$

a. $-20x^2 - 10x - 15$

c. $20x^2 + 10x - 15$

b. $32x^2 - 2x - 15$

d. $-20x^2 - 10x + 15$

- _____ 2. Find $(f \cdot g)(x)$ for the following functions.

$$f(x) = 3x^2 - 4x - 5$$

$$g(x) = 11x - 3$$

a. $33x^3 - 53x^2 - 43x - 15$

c. $33x^3 - 53x^2 + 12x - 70$

b. $33x^3 + 9x^2 - 87x + 15$

d. $33x^3 - 53x^2 - 43x + 15$

- _____ 3. Find $\left(\frac{f}{g}\right)(x)$ for the following functions.

$$f(x) = 12x^2 - 5x - 8$$

$$g(x) = 7x - 6$$

a. $\frac{12x^2 - 5x - 8}{7x - 6}, x \neq -\frac{7}{6}$

c. $\frac{12x^2 - 5x - 8}{7x - 6}, x \neq \frac{6}{7}$

b. $\frac{12x^2 - 5x - 8}{7x - 6}, x \neq -\frac{6}{7}$

d. $\frac{12x^2 - 5x - 8}{7x - 6}, x \neq \frac{7}{6}$

- _____ 4. Find $[g \circ h](x)$ and $[h \circ g](x)$.

$$g(x) = 7x$$

$$h(x) = -5x^3 + 9x^2 - 2x + 2$$

a. $[g \circ h](x) = -35x^4 + 63x^3 - 14x^2 + 14x$

$$[h \circ g](x) = -1715x^4 + 441x^3 - 14x^2 + 2x$$

b. $[g \circ h](x) = -35x^3 + 63x^2 - 14x + 14$

$$[h \circ g](x) = -1715x^3 + 441x^2 - 14x + 2$$

c. $[g \circ h](x) = 35x^3 + 63x^2 - 14x + 14$

$$[h \circ g](x) = -1715x^3 + 441x^2 - 14x + 2$$

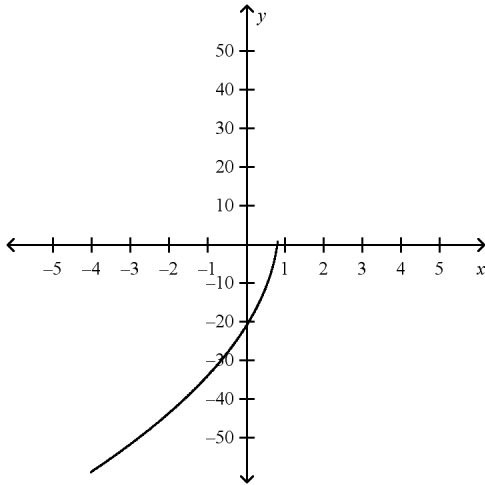
d. $[g \circ h](x) = -35x^3 + 63x^2 - 14x + 14$

$$[h \circ g](x) = -1715x^3 + 441x^2 - 14x + 14$$

_____ 5. Graph the given function. State its domain and range.

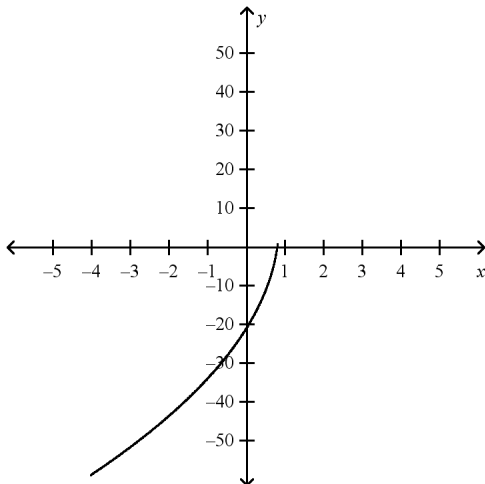
$$y = -12\sqrt{5-6x} + 6$$

a.



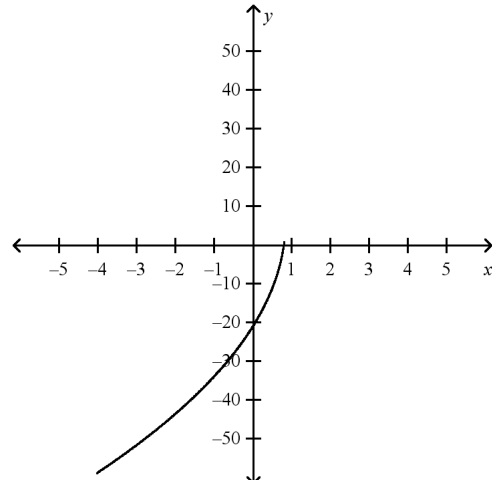
The domain is $x \leq \frac{5}{6}$ and the range is $y \leq 6$.

b.



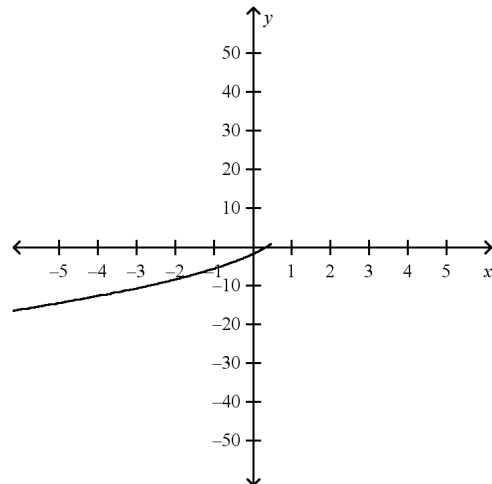
The domain is $x \leq \frac{5}{6}$ and the range is $y \geq 6$.

c.



The domain is $x \geq \frac{5}{6}$ and the range is $y \geq 6$.

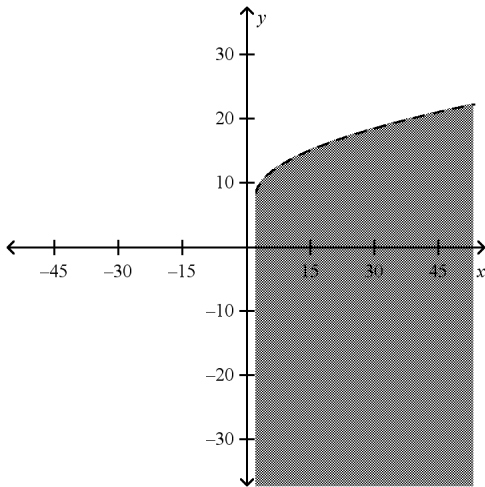
d.



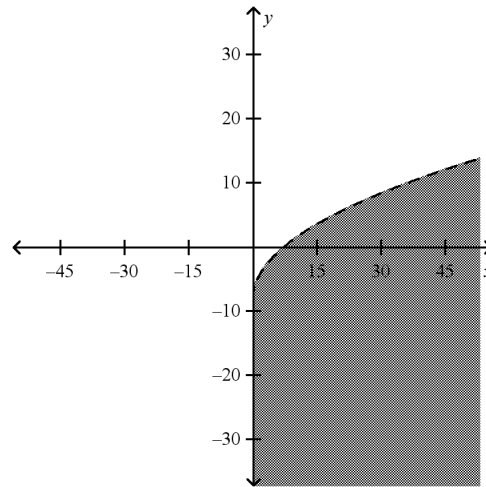
The domain is $x \leq \frac{5}{6}$ and the range is $y \geq 6$.

_____ 6. Graph the inequality $y < \sqrt{4x-9} + 8$.

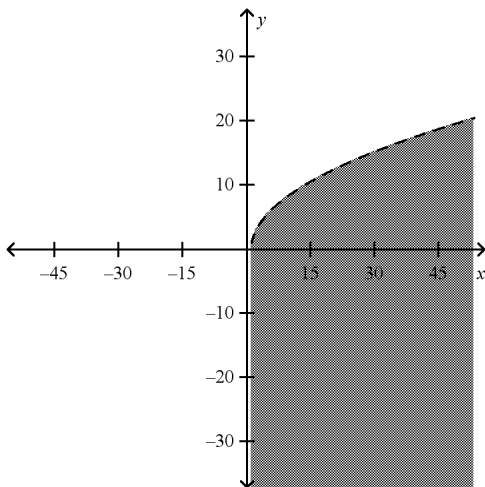
a.



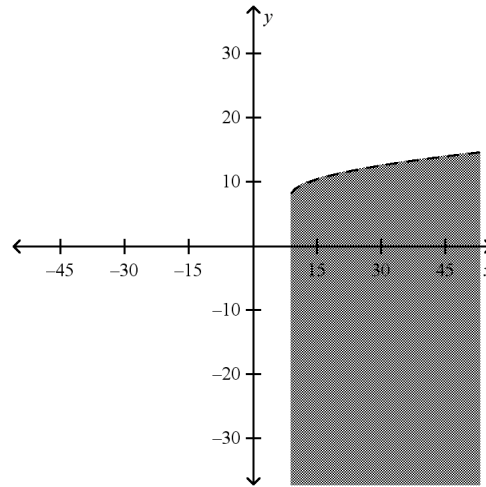
c.



b.



d.



_____ 7. Simplify $\sqrt{72x^5y^{12}}$.

a. $6y^6\sqrt{2x^5}$

c. $6x^2y^6\sqrt{x}$

b. $6\sqrt{2x^5y^{12}}$

d. $6x^2y^6\sqrt{2x}$

Simplify.

_____ 8. $\sqrt{162} + \sqrt{32} - \sqrt{50}$

a. $8\sqrt{2}$

c. $8\sqrt{3}$

b. $18\sqrt{2}$

d. $10\sqrt{3}$

_____ 9. $\sqrt{192} - \sqrt{245} + \sqrt{27} + \sqrt{80}$

a. $11\sqrt{3} - 3\sqrt{5}$

c. $3\sqrt{3} - 11\sqrt{5}$

b. $11\sqrt{3} + 3\sqrt{5}$

d. $3\sqrt{3} + 11\sqrt{5}$

_____ 10. $(\sqrt{16} - \sqrt{8})^2$

a. $24 - 2\sqrt{128}$ c. $8 - 2\sqrt{128}$
 b. $24 + 2\sqrt{128}$ d. $8 + 2\sqrt{128}$

Write the given radical using rational exponents.

_____ 11. $\sqrt[11]{10x^8y^6}$

a. $10^{\frac{1}{11}}x^{\frac{8}{11}}y^{\frac{6}{11}}$ c. $10^{11}x^{88}y^{66}$
 b. $10^{\frac{1}{11}}x^{\frac{8}{11}}y^{\frac{6}{11}}$ d. $10x^{\frac{8}{11}}y^{\frac{6}{11}}$

_____ 12. $\sqrt[2]{6a^5b^9}$

a. $6^2a^{10}b^{18}$ c. $6^{\frac{1}{2}}a^5b^9$
 b. $6a^{\frac{5}{2}}b^{\frac{9}{2}}$ d. $6^{\frac{1}{2}}a^{\frac{5}{2}}b^{\frac{9}{2}}$

Simplify each expression.

_____ 13. $\frac{b^{\frac{2}{3}}}{b^{\frac{1}{7}}}$

a. $b^{\frac{11}{21}}$ c. $b^{\frac{17}{7}}$
 b. $b^{\frac{17}{3}}$ d. $b^{\frac{17}{21}}$

Solve the given equation.

_____ 14. $6 + \sqrt{6x+2} = 18$

a. $\frac{71}{3}$ c. $\frac{5}{3}$
 b. $\frac{161}{3}$ d. $\frac{158}{3}$

Solve the given inequality.

_____ 15. $8 + \sqrt{x+4} > 18$

a. $x > 312$ c. $x > 96$
 b. $x > -4$ d. $x > 6$

- _____ 16. $\sqrt{3x-9} + 3 \leq 8$
- a. $3 \leq x \leq \frac{70}{3}$ c. $3 \leq x \leq \frac{73}{3}$
- b. $3 \leq x \leq \frac{34}{3}$ d. $x \leq 3$

What is a simpler form of the radical expression?

- _____ 17. $\sqrt[4]{81x^{20}y^8}$
- a. $3|x^5|y^2$ b. $9|x^{25}|y^4$ c. $9x^{25}|y^4|$ d. $3x^5|y^2|$
- _____ 18. $\sqrt[3]{27x^{15}y^{24}}$
- a. $3x^5|y^8|$ b. $9x^{15}|y^{24}|$ c. $3x^5y^8$ d. $9|x^{15}|y^{24}$
- _____ 19. The formula for the volume of a sphere is $V = \frac{4}{3}\pi r^3$. Find the radius, to the nearest hundredth, of a sphere with a volume of 15 in.³.
- a. 3.58 in. b. 258.01 in. c. 1.53 in. d. 1.85 in.
- _____ 20. The formula for the volume of a cone is $V = \frac{1}{3}\pi r^2 h$. Find the radius, to the nearest hundredth, of a cone with a height of 3 in. and a volume of 12 in.³.
- a. 1.62 in. b. 1.13 in. c. 1.95 in. d. 3.82 in.

Multiply and simplify if possible.

- _____ 21. $\sqrt{7x}(\sqrt{x} - 7\sqrt{7})$
- a. $x\sqrt{7} - 49\sqrt{x}$ c. $x\sqrt{7} - x\sqrt{49}$
- b. $\sqrt{7x} - 49x$ d. $-\sqrt{42x}$

- _____ 22. Write the radical expression $\frac{8}{\sqrt[7]{x^{15}}}$ in exponential form.

- a. $8x^{-\frac{7}{15}}$ b. $8x^{\frac{15}{7}}$ c. $8x^{-\frac{15}{7}}$ d. $8x^{\frac{7}{15}}$

_____ 23. What is $\frac{\sqrt[3]{x^3}}{\sqrt[5]{x^2}}$ in simplest form?

a. $x^{\frac{3}{5}}$

b. $x^{\frac{5}{3}}$

c. $x^{\frac{9}{15}}$

d. $x^{\frac{15}{9}}$

_____ 24. Write $(8a^{-3})^{-\frac{2}{3}}$ in simplest form.

a. $\frac{a^2}{4}$

b. $4a^2$

c. $\frac{1}{4a^2}$

d. none of these

What is the solution of the equation?

_____ 25. $\sqrt{2x+8} - 6 = -4$

a. 4

b. -2

c. 12

d. -3

_____ 26. $-10 + \sqrt{x+8} = -4$

a. 36

b. 28

c. -2

d. 44

_____ 27. $2\sqrt[5]{(x+6)^3} + 3 = 19$

a. 26

b. 14

c. 38

d. 2

_____ 28. $4(3-x)^{\frac{4}{3}} - 5 = 59$

a. -5, 11

b. 5

c. 11

d. -11

_____ 29. $\sqrt{3x+28} - 8 = x$

a. -9

b. 9 and -4

c. -4

d. -9 and -4

_____ 30. What is the solution of $\sqrt{2x+4} - \sqrt{x} = 2$?

a. $x = 0$ and $x = -16$

b. $x = 16$ and $x = -16$

c. $x = 0$

d. $x = 0$ and $x = 16$