

INVERSE FUNCTIONSFind $f^{-1}(x)$.

1. $f(x) = \frac{2x-5}{7}$

2. $f(x) = \sqrt{4x-5}$

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

4. $f(x) = \sqrt[3]{3x+5}$

Determine whether f and g are inverses of each other.

5. $f(x) = 3x - 2$ $g(x) = \frac{x-2}{3}$

6. $f(x) = \sqrt{x-5}$ $g(x) = x^2 + 5$

ANSWERS

1. $f^{-1}(x) = \frac{7x+5}{2}$

2. $f^{-1}(x) = \frac{x^2+5}{4}$

3. $f^{-1}(x) = \pm \frac{\sqrt{x+3}}{2}$

4. $f^{-1}(x) = \frac{x^3-5}{3}$

5. No

6. yes

RULES OF EXPONENTS

Simplify – Write all answers with positive exponents.

1. $\frac{a^2 b^3 c^7}{a^6 b c^5}$

6. $\frac{a^{3n-2} b^{n+1}}{a^{2n+1} b^{2n+2}}$

2. $\frac{-4x^3 y^{-2}}{(2x)^2}$

7. $\frac{y^{2n}}{-y^{8n}}$

3. $\left((2x^4 y^2)^3 \right)^{-2}$

8. $6a^0 \cdot 5a^{-4}$

4. $\frac{28x^0 y^{15} z^{-4}}{4x^{-1} y^6 z}$

9. $\left(\frac{2k}{p^5} \right)^{-4}$

5. $\left(\frac{3f^{-4} g^3 h^7}{3^6 f^{-5} g^{-7} h^2} \right)^4$

10. $(4x^2 y^{-2})^{-3} (5x^{-6} y^{-1})^2$

$$11. \frac{(2^{-3}a^4b^{-7}c^2)^{-2}(2^{-7}a^6b^{-3}c^{-5})^3}{2^{-12}a^{-5}b^{12}c^{11}}$$

$$14. 3x^0y^0 + \frac{7}{(6x^2y^{-5})^0}$$

Simplify using scientific notation only. *Do not convert to standard numbers!*

$$15. (7.2 \times 10^5)(8.1 \times 10^3)$$

$$12. \left(\frac{p}{4q^{-4}}\right)^3 \left(\frac{-12qr^8}{p^3}\right) (q^{-7}r^{11})^{-2}$$

$$16. \frac{8 \times 10^{-1}}{16 \times 10^{-4}}$$

$$17. \frac{(3.6 \times 10^5)(9.8 \times 10^{-8})}{1.4 \times 10^7}$$

$$13. \left(\frac{8x^3y^{-1}}{9x^{-4}y^2}\right)^{-2} \left(\frac{2x^{-1}y^2}{3x^{-5}y^3}\right)^3$$

$$18. \frac{2.3436 \times 10^{14}}{(9.3 \times 10^3)(5.6 \times 10^2)}$$

ANSWERS

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

2. $-\frac{x}{y^2}$

3. $\frac{1}{64x^{24}y^{12}}$

4. $\frac{7xy^9}{z^5}$

5. $\frac{f^4g^{40}h^{20}}{3^{20}}$

6. $\frac{a^{n-3}}{b^{n+1}}$

7. $-\frac{1}{y^{6n}}$

8. $\frac{30}{a^4}$

9. $\frac{p^{20}}{16k^4}$

10. $\frac{25y^4}{64x^{18}}$

11. $\frac{a^{15}}{8b^7c^{30}}$

12. $\frac{-3q^{27}}{16r^{14}}$

13. $\frac{3y^3}{8x^2}$

14. 10

15. 5.832×10^9

16. 5×10^2

17. 2.52×10^{-9}

18. 4.5×10^7

ALGEBRA II HANDOUT

Simplify each expression.

1. $-\sqrt{144b^2c^6}$

2. $\sqrt[3]{(2x-y)^3}$

3. $\sqrt{4y^2+12y+9}$

4. $\sqrt[3]{-192}$

5. $\sqrt[4]{112}$

6. $(2\sqrt[3]{24})(7\sqrt[3]{128})$

7. $\sqrt[4]{32x^4y^5n^{10}}$

8. $\sqrt[3]{54f^8g^{13}h^{29}}$

9. $\sqrt{48m^6n^{11}p^{14}}$

10. $\sqrt[5]{96h^{17}j^{42}k^6}$

11. $\sqrt{3a^2b^4c^3} \cdot \sqrt{15a^6b^6c}$

12. $\sqrt[4]{6x^2y^9z^6} \cdot \sqrt[4]{8x^{10}y^4z^{12}}$

13. $\sqrt[3]{24} + \sqrt[3]{375} - \sqrt{48}$

ANSWERS

1. $-12|bc^3|$

2. $2x - y$

3. $|2y + 3|$

4. $-4\sqrt[3]{3}$

5. $2\sqrt[4]{7}$

6. $112\sqrt[3]{6}$

7. $2|x|yn^2\sqrt[4]{2yn^2}$

8. $3f^2g^4h^9\sqrt[3]{2f^2gh^2}$

9. $4n^5|m^3p^7|\sqrt{3n}$

10. $2h^3j^8k^2\sqrt[3]{3h^2j^2k}$

11. $3a^4|b^5|c^2\sqrt{5}$

12. $2|x^3|y^3z^4\sqrt[4]{3yz^2}$

13. $7\sqrt[3]{3} - 4\sqrt{3}$

ALGEBRA 2 HANDOUT
Graphing Powers & Roots

Graph each of the following functions on graph paper. Plot as many points as possible with y-coordinates between -20 and 20. **Show T-tables of values for each graph.**

1. $y = (x - 3)^3$

2. $y = -(x + 5)^2 + 4$

3. $y = \sqrt{x + 4}$

4. $y = \sqrt[3]{-x} - 2$

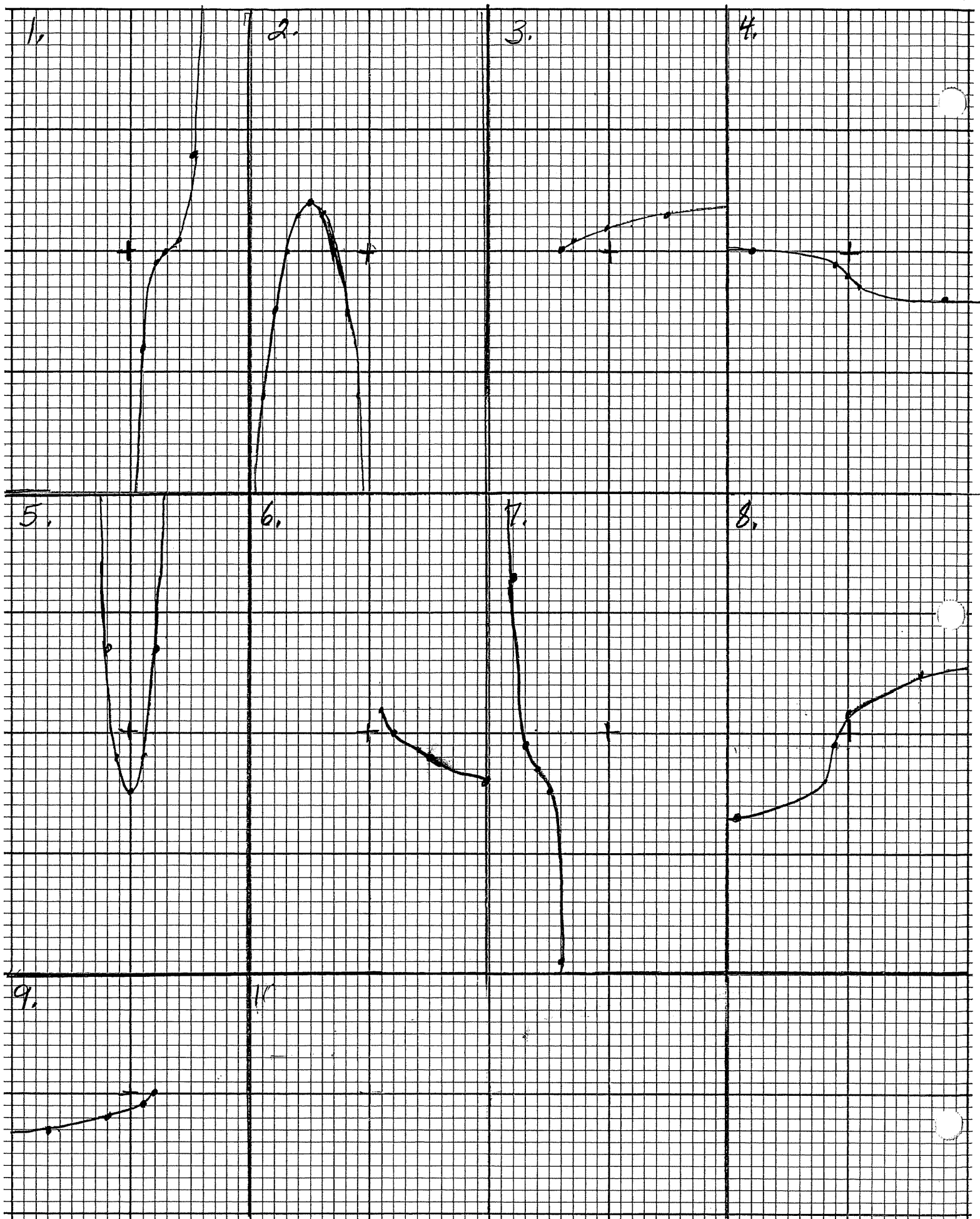
5. $y = 3x^2 - 5$

6. $y = -2\sqrt{x - 1} + 2$

7. $y = -2(x + 6)^3 - 3$

8. $y = 3\sqrt[3]{x + 1} - 1$

9. $y = -\sqrt{2 - x}$



ALGEBRA II WORKSHEET

Express in simplest radical form.

1. $\sqrt{6x^3y^2} \cdot \sqrt[4]{2xy^5}$

2. $\sqrt[3]{a^2b^5} \cdot \sqrt[5]{a^6b}$

Evaluate the expression without using a calculator.

3. $16^{\frac{1}{2}}$

4. $\left(-\frac{125}{27}\right)^{\frac{2}{3}}$

5. $100^{\frac{3}{2}}$

6. $32^{\frac{3}{5}}$

7. $\left(\frac{16}{81}\right)^{\frac{3}{4}}$

8. $\left(\frac{32}{3125}\right)^{\frac{2}{5}}$

Write as a single radical then simplify the result.

9. $\sqrt{\sqrt[4]{2x^{11}}}$

10. $\sqrt{\sqrt[3]{64a^9b^{14}}}$

Use a calculator to approximate the number. Round to 3 decimal places.

11. $\sqrt[8]{5623}$

12. $15.25^{\frac{7}{5}}$

Solve the following expressions in quadratic form by factoring.

13. $x^4 - 4x^2 - 45 = 0$

14. $x^{\frac{2}{3}} + 8x^{\frac{1}{3}} + 7 = 0$

15. $x^{\frac{1}{2}} - 5x^{\frac{1}{4}} + 6 = 0$

ANSWERS

1. $xy^2\sqrt[4]{72x^3y}$ 2. $ab^{15}\sqrt[13]{a^{13}b^{13}}$ 3. 4 4. $\frac{25}{9}$ 5. $\frac{1}{1000}$ 6. $\frac{1}{8}$ 7. $\frac{27}{8}$ 8. $\frac{25}{4}$

9. $x^8\sqrt{2x^3}$ 10. $2ab^{26}\sqrt[3]{a^3b^2}$ 11. 2.943 12. 0.022 13. ± 3 14. -343, -1 15. 16, 81

Assignment:

1-8) 6 18-24) 5 31-32) 2
9-10) All 25-28) 3 33-34) 2
11-17) 5 29-30) 1 35-38) 3

Name _____

ALGEBRA II REVIEW

Exponents & Roots

Simplify.

$$1. \left(\frac{-3}{4}x^2y^3\right)^2 \left(\frac{8}{9}xy^4\right)$$

$$2. \frac{6^{24} \cdot 6^{-9}}{6^6}$$

$$3. \frac{(3^3x^{-3}y)^{-4} (3^{10}x^{-1}y^{-4})^2}{3^{-2}x^4y^3}$$

$$4. \left(\frac{10x^2y^{-2}}{9x^{-3}y^3}\right)^{-2} \left(\frac{2x^{-3}y^8}{3x^{-5}y^6}\right)^3$$

$$5. \frac{4a^0b^{-1}}{7a^0+(3a^2b^4)^0}$$

$$6. \frac{(4f^{-5}g^3h)^3 (f^{-7}g^6h^{-1})^{-5}}{(6f^3g^{-4}h^{-5})^2 (11f^{-4}g^{13}h^{-8})^0}$$

$$7. \left(\frac{4p^5}{m^3}\right)^{-2} \left(\frac{9p^3r^{-5}}{m^7}\right) \left(\frac{m^4p^2}{3r^7}\right)^3$$

$$8. \left(\frac{3x}{2x^{-2}}\right)^{-2}$$

Evaluate *using scientific notation*. Show work and write answers in scientific notation. Do NOT convert to decimal numbers.

$$9. \frac{1.5 \times 10^{-5}}{6 \times 10^2}$$

$$10. \frac{(8.4 \times 10^7)(4 \times 10^{-5})}{1.6 \times 10^{-3}}$$

Express each of the following in simplest radical form.

$$11. \sqrt[3]{108m^4n^{15}p^{29}}$$

$$12. \sqrt{4r^2 + 12r + 9}$$

$$13. \sqrt[4]{\sqrt{14s^{15}t^{16}}}$$

$$14. \sqrt[4]{6b^6r^7t^{10}} \cdot \sqrt[4]{8b^2r^2t^4}$$

$$15. \sqrt{125m^2n} \cdot \sqrt{32m^4n^6}$$

$$16. \sqrt[4]{f^6g^3} \cdot \sqrt[5]{fg^4}$$

Evaluate 18-24 without using a calculator.

$$17. \sqrt[6]{p^5q^2} \cdot \sqrt{p^3q}$$

$$18. \sqrt[4]{32} + 3\sqrt[4]{162} - \sqrt{98}$$

$$19. 3\sqrt[3]{192} \cdot 2\sqrt[3]{250}$$

$$20. \sqrt[3]{125^4}$$

$$21. \left(9^{\frac{3}{4}}\right)^{\frac{2}{3}}$$

$$22. 100^{\frac{1}{2}}$$

$$23. 144^{-\frac{3}{2}}$$

$$24. \left(\frac{729}{64}\right)^{\frac{5}{6}}$$

Use a calculator to evaluate 25-28. Round decimal values to 4 decimal places.

$$25. \sqrt[3]{89}$$

$$26. \sqrt[4]{4096}$$

$$27. 262,144^{\frac{5}{6}}$$

$$28. \left(25^{\frac{2}{3}}\right)^{\frac{3}{4}}$$

Solve each equation.

$$29. 2\sqrt[3]{m-1} - 14 = -8$$

$$30. \sqrt{4x^2 - 3x + 2} - 2x - 5 = 0$$

$$31. \sqrt{x+11} - \sqrt{15+2x} = 1$$

$$32. \sqrt{7-x} + \sqrt{x-2} = 3$$

33. $x^6 - 13x^3 + 36 = 0$

34. $x^{\frac{2}{7}} + x^{\frac{1}{7}} - 2 = 0$

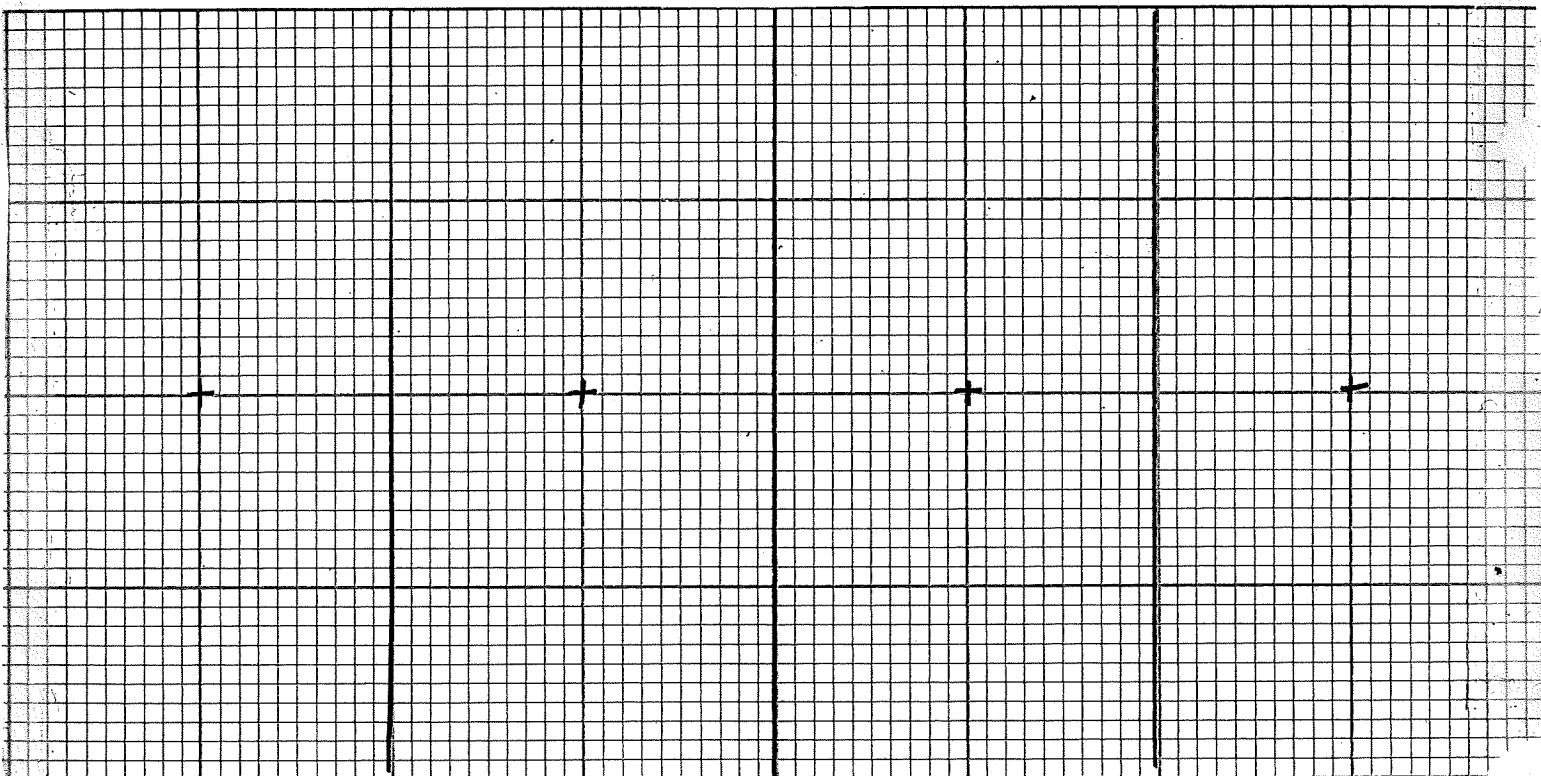
Graph each of the following.

35. $y = (x+2)^3 - 1$

36. $y = -3x^2 + 8$

37. $y = \sqrt{9-x}$

38. $y = 3\sqrt[3]{x-2} - 4$



41. The table below lists the life expectancies, in years, of girls born from 1920 to 1990. Create a scatter plot of the following data. Enter the years with two digits only. Then find a power regression curve that fits the data. Record the equation. Predict the life expectancy of a girl born in the year 2010 using your equation.

Year of Birth	1920	1930	1940	1950	1960	1970	1980	1990
Life Expectancy	54.6	61.6	65.2	71.1	73.1	74.4	77.4	78.8

REVIEW ANSWERS

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|---|---|---|
| <p>1. $\frac{1}{2}x^5y^{10}$</p> <p>2. 6^9</p> <p>3. $\frac{3^{10}x^6}{y^{15}}$</p> <p>4. $\frac{6y^{16}}{25x^4}$</p> <p>5. $\frac{1}{2b}$</p> <p>6. $\frac{16f^{14}h^{18}}{9g^{13}}$</p> <p>7. $\frac{m^{11}}{48pr^{26}}$</p> <p>8. $\frac{4}{9x^6}$</p> <p>9. 2.5×10^{-8}</p> <p>10. 2.1×10^6</p> <p>11. $3mn^5p^9\sqrt[3]{4mp^2}$</p> | <p>12. $2r+3$</p> <p>13. $st^2\sqrt[8]{14s^7}$</p> <p>14. $2b^2r^2 t^3 \sqrt[4]{3rt^2}$</p> <p>15. $20 m^3 n^3\sqrt{10n}$</p> <p>16. $fg\sqrt[20]{f^{14}g^{11}}$</p> <p>17. $p^2\sqrt[6]{p^2q^5}$</p> <p>18. $11\sqrt[4]{2} - 7\sqrt{2}$</p> <p>19. $120\sqrt[3]{6}$</p> <p>20. 625</p> <p>21. 3</p> <p>22. $\frac{1}{10}$</p> | <p>23. $\frac{1}{1728}$</p> <p>24. $\frac{32}{243}$</p> <p>25. 1.898</p> <p>26. 8</p> <p>27. 32,768</p> <p>28. 5</p> <p>29. 28</p> <p>30. -1 (must check)</p> <p>31. -7 (must check)</p> <p>32. 3, 6 (must check)</p> <p>33. $\sqrt[3]{4}, \sqrt[3]{9}$</p> <p>34. -128, 1</p> <p>35.—38. See graphs</p> <p>39. $y = 26.723598x^{0.2432556}$
83.8 years</p> |
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