Summer Math Packet for Algebra II

The Spire School

For review of skills, visit

https://www.khanacademy.org/

https://www.virtualnerd.com/

https://www.youtube.com/

and simply put the topic on the left upper corner of the worksheet into the search engine.

Simplifying Square Roots

Name_____ ID: 1

Assignment

Date_____ Period____

Simplify.

1) $-7\sqrt{216}$

2) $-3\sqrt{243}$

3) $7\sqrt{20}$

4) $10\sqrt{324}$

5) $\sqrt{128}$

6) $\sqrt{512}$

7) $\sqrt{294}$

8) $\sqrt{54}$

9) $\sqrt{175}$

10) $\sqrt{216}$

11) $\sqrt{144}$

12) $\sqrt{75}$

Simplify. Use absolute value signs when necessary.

13) $-8\sqrt{147a^5}$

14) $8\sqrt{20k^4}$

15) $-6\sqrt{210}$

16) $4\sqrt{360b^4}$

17) $4\sqrt{200n^3}$

18) $8\sqrt{16n^5}$

19) $-\sqrt{210b}$

20) $10\sqrt{360x^4}$

21) $-\sqrt{144v^2}$

22) $-\sqrt{144m^3}$

23) $7\sqrt{500m}$

24) $4\sqrt{80x}$

Assignment

Factor the common factor out of each expression.

1) $-p^{12} - 3p^3$

2) $20n^4 + 25$

3) $9a^3 - 3a$

4) $2a^3 - 6a$

5) $5 - 25v - 15v^2$

6) $-10 + 25m + 5m^2$

7) $p^3 - 3p^2 + 5p$

8) $9v^2 - 3v + 12v^4$

9) $5k^5 + 2k^4 - 3k^3 + 2k^2$

10) $8k^3 + 4k^2 + 20k + 12$

11) $20x^5 - 16x^4 + 16x^3 + 8x^2$

12) $-12a^5 + 12a^4 + 8a^3 - 20a^2$

Factoring ~~Binomials~~ Trinomials ID: 1

Factor each completely.

1) $x^2 + 2x - 15$

2) $n^2 + 3n - 54$

3) $v^2 - 6v + 8$

4) $v^2 + 8v + 7$

5) $x^2 + 6x - 40$

6) $x^2 + 5x - 14$

7) $15x^2 - 36x + 12$

8) $2x^2 + 9x - 35$

9) $3a^2 + 37a + 70$

10) $5m^2 - 17m - 40$

11) $3n^2 - 26n + 35$

12) $5x^2 + 54x + 40$

Difference of Two Squares ID: 1

Factor completely.

Factor each completely.

1) $16n^2 - 9$

2) $n^2 - 9$

3) $4n^2 - 1$

4) $x^2 - 25$

5) $25r^2 - 49$

6) $9n^2 - 1$

7) $36x^2 - 1$

8) $28v^2 - 175$

9) $64m^2 - 100$

10) $54n^2 - 6$

11) $100p^2 - 49$

12) $9x^2 - 100$

13) $16a^2 - 9$

14) $9n^2 - 1$

15) $16v^2 - 1$

16) $4x^2 - 9$

Factor by Grouping

Factor each completely.

1) $20x^3 + 5x^2 + 20x + 5$

2) $10v^3 + 25v^2 + 40v + 100$

3) $12n^3 - 30n^2 + 4n - 10$

4) $12x^3 - 8x^2 + 48x - 32$

5) $45b^3 - 9b^2 + 75b - 15$

6) $12k^3 - 9k^2 + 24k - 18$

7) $15k^3 + 15k^2 + 12k + 12$

8) $20b^3 - 8b^2 + 80b - 32$

9) $5x^3 + 2x^2 + 5x + 2$

10) $20n^3 + 12n^2 + 5n + 3$

11) $8x^3 - 6x^2 + 12x - 9$

12) $5x^3 + 4x^2 + 5x + 4$

13) $60b^3 + 100b^2 + 48b + 80$

14) $16m^3 + 40m^2 + 20m + 50$

15) $5x^3 + 25x^2 + 3x + 15$

16) $2x^3 - 5x^2 + 4x - 10$

Add/Sub/Mult Polynomials

Assignment

Simplify each expression.

1) $(5n^3 + 2n^2 - n) - (4n - 2n^2 + 2n^3)$

2) $(4p^4 - 6p + 3p^3) - (7p - 7p^3 + 5p^4)$

3) $(5 + 3m^3 + 3m^4) - (2m^3 + 7 - 5m^4)$

4) $(m + 7m^4 + 4) - (m^4 + 8 + 5m)$

5) $(7n^2 + 4) + (5n^3 + 8 - 7n^2)$

6) $(8n^4 - 2n^3) + (2n^4 + 5n^3 - 5n)$

7) $(4x + 6x^3) + (6x^4 + 5x - 5x^3)$

8) $(4m^4 + m^2) - (2m^2 - 7m^3 + 7m^4)$

Find each product.

9) $(5k + 3)(k + 5)$

10) $(8x - 7)(3x - 8)$

11) $(6m + 1)(8m + 4)$

12) $(5n + 4)(3n + 1)$

13) $\left(\frac{1}{5}x + \frac{23}{6}\right)\left(\frac{11}{6}x + \frac{13}{5}\right)$

14) $\left(\frac{3}{2}n - \frac{1}{2}\right)\left(\frac{1}{5}n - \frac{40}{7}\right)$

15) $\left(\frac{3}{2}k + \frac{7}{6}\right)\left(\frac{4}{3}k - \frac{11}{3}\right)$

16) $\left(7n + \frac{4}{5}\right)\left(\frac{9}{2}n - \frac{13}{7}\right)$

17) $(3p - 4)(3p + 4)$

18) $(8x + 4)^2$

19) $(6p - 3)^2$

20) $(x - 3)^2$

Properties of Exponents

ID: 1

Simplify. Your answer should contain only positive exponents.

1) $3x^{0} \cdot x^{-2}$

2) $2b^{-2} \cdot b^{-3}$

3) $n^{-1} \cdot 2n^{2}$

4) $2b^{3} \cdot 3b^{-2}$

5) $(2xy^{3})^{2} \cdot 2x^{0}y^{5}$

6) $(-v^{2} \cdot -vu^{3})^{2}$

7) $(-x^{0}y^{-4} \cdot y^{4})^{3}$

8) $(-2x^{2}y^{0})^{-1} \cdot -x^{5}y^{5}$

9) $-n^{-3} \cdot (2m^{2}n^{-2})^{-3}$

10) $-2nn^{2} \cdot (2m^{5}n^{3})^{-2}$

11) $(2x^{5})^{0} \cdot -x^{0} \cdot -2x^{0}y^{2}$

12) $(-2x^{2})^{2} \cdot -x^{4}y^{0}$

13) $\dfrac{2x^{-1}y^{-4} \cdot -x^{4}y^{4}}{(-x^{-4}y^{2})^{3}}$

14) $\dfrac{v^{-1} \cdot -2v^{0}}{(-2v^{3})^{-2}}$

15) $\left(\dfrac{-2yx^{3} \cdot -2yx^{-2}}{-2x^{-2}y^{0}}\right)^{-3}$

16) $-\dfrac{2m^{4}n^{0} \cdot (2m^{-2}n^{4})^{2}}{n^{-2}}$

Multiplying and Dividing Rational Expressions ID: 1

Simplify each expression.

1) $\frac{14}{10m} \cdot \frac{4m}{13}$

2) $\frac{17}{10x} \cdot \frac{5}{8x^2}$

3) $\frac{12}{11} \cdot \frac{13}{3p^2}$

4) $\frac{11}{16} \cdot \frac{12x^3}{5}$

5) $\frac{3r^2 - 15r}{8} \cdot \frac{8}{r - 5}$

6) $\frac{8p^2}{p^2 + 11p + 28} \cdot \frac{8p^2 + 32p}{8p}$

7) $\frac{p^2 - 5p - 24}{4} \cdot \frac{4}{4p^3 + 12p^2}$

8) $\frac{1}{m + 1} \cdot \frac{m^2 + 9m + 8}{m - 7}$

9) $\frac{15a^3}{15} \div \frac{20a^2}{12a^3}$

10) $\frac{7}{2r} \div \frac{17}{16}$

11) $\frac{12x^4}{15} \div \frac{15}{17}$

12) $\frac{17p}{10p} \div \frac{9p}{16p^2}$

13) $\frac{2v}{v^2 - 10v + 24} \div \frac{v - 6}{v^2 - 12v + 36}$

14) $\frac{r - 4}{r^2 - 2r - 8} \div \frac{1}{r - 7}$

15) $\frac{3m}{6} \div \frac{20m + 20}{30m + 30}$

16) $\frac{2n}{6n} \div \frac{n - 6}{6n^2 - 36n}$

Algebra 1 Solving Quadratic Equations by Factoring Name_____ ID: 1

Assignment Date_____ Period____

Solve each equation by factoring.

1) $(8x+3)(x-3)=0$

2) $(5x-3)(x+7)=0$

3) $n(n+5)=0$

4) $x(7x+8)=0$

5) $(n-3)(8n-5)=0$

6) $(m-7)(m-5)=0$

7) $(n-4)(n+6)=0$

8) $(x-7)(x+8)=0$

9) $n^2+n-12=0$

10) $n^2+10n+21=0$

11) $x^2+11x+30=0$

12) $r^2-11r+24=0$

13) $k^2-25=0$

14) $x^2-7x+10=0$

15) $n^2+7n-8=0$

16) $x^2+9x+20=0$

17) $49b^2-28b-32=0$

18) $7n^2+55n-8=0$

19) $4x^2+13x+3=0$

20) $5n^2-41n+8=0$

21) $5n^2-7n=0$

22) $7n^2-43n+40=0$

23) $2a^2-3a-5=0$

24) $3a^2+5a=0$