

[07-04-16-P1-8]

## Exercises [A-2]

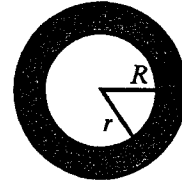
Factor completely:

1.  $ax^2 - ay^2$
2.  $6x^2 + 13x + 5$
3.  $12a^2 + 14a - 10$
4.  $P^3 - P^3R^2$
5.  $x^2 - 14x + 49$
6.  $16x^2 + 4x + 2$
7.  $a^2b^2 - 16$
8.  $2x^2 + 4x - 6$
9.  $6a^2 - a - 12$
10.  $P + Prt$
11.  $12x^2 + x - 35$
12.  $12x^2 - 13x - 35$
13.  $12x^2 + 89x + 35$
14.  $12x^2 + 67x + 35$
15.  $12x^2 + 79x - 35$
16.  $12x^2 - 53x - 35$
17.  $12x^2 + 52x + 35$
18.  $12x^2 + 41x + 35$
19.  $x^3y - 9xy^3$
20.  $1 + 2x^2 + x^4$
21.  $-x^2 + 6xy - 9y^2$
22.  $25p^2 - 20pq + 4q^2$
23.  $18 - 32a^2$
24.  $a^4b^4 - 256$
25.  $36 - 48y + 16y^2$
26.  $1 + 8p^2 + 16p^4$
27.  $8x^2 - 8xy - 6y^2$
28.  $24r^2 - r - 3$
29.  $x^3 + 3x^2 + 2x$
30.  $6b^2 - 7bx - 3x^2$
31.  $125x^2z^2 - 5z^2$
32.  $77x^2 - 3xy - 2y^2$
33.  $5r^2 - 130r + 800$
34.  $6a^4 + 5a^2b^2 - 14b^4$
35.  $16r^2 + 72rs + 81s^2$
36.  $3a^4 - 27$
37.  $x^8 - 64$
38.  $15x^3 - 32x^2y + 16xy^2$
39.  $3x^2 - 20x - 800$
40.  $9z^2 + 90z - 400$
41.  $16x^2 - 48x + 36$
42.  $3a^2b^2 - 21ab + 30$
43.  $16r^3 + 64r^2 + 60r$
44.  $11a^3 - 11a^2b - 66ab^2$

Simplify:

45.  $\frac{x^2 + xy}{x^2 - y^2}$
46.  $\frac{2x - 4}{x^2 - 4}$
47.  $\frac{x^2 - 4}{x^2 + 4x + 4}$
48.  $\frac{6x^3 + 10x^2}{36x^3 - 100x}$
49.  $\frac{x + y}{x^2 + 3xy + 2y^2}$
50.  $\frac{y^2 - 9}{4y + 12}$
51.  $\frac{x^2 + 7x + 6}{x^2 + 4x - 12}$
52.  $\frac{36 - 30a - 6a^2}{60 + 22a + 2a^2}$

53. Find the value of  $\pi(R^2 - r^2)$  when  $\pi = \frac{22}{7}$ ,  $R = 17$ ,  $r = 11$ .
54. Find the value of  $\frac{x^2 + 8x - 9}{(x - 1)^2}$  when  $x = -5$ .
55. Find the value of  $\frac{x^3y - xy^3}{4xy}$  when  $x = 6$ ,  $y = -2$ .
56. Write a formula for the area of a circular ring of outer radius  $R$  inches and inner radius  $r$  inches. Find the area when  $R = 58$  and  $r = 51$ . (Use  $\pi = \frac{22}{7}$ .)



### Exercises <sup>[8]</sup>

Factor completely:

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| 1. $4z^4 - 64$           | 10. $36x^2 - 90x - 496$    |
| 2. $x^4 - 625$           | 11. $16x^4 - 8x^2 + 1$     |
| 3. $p^4q^4 - r^4$        | 12. $3x^4 - 48$            |
| 4. $1 - 5z^2 + 4z^4$     | 13. $1 - 10z^2 + 9z^4$     |
| 5. $5a^4 + a^2 - 6$      | 14. $81a^4 - 1$            |
| 6. $a^4 - 2a^2b^2 + b^4$ | 15. $12a^4 + a^2x^2 - x^4$ |
| 7. $x^6 - 8x^4 + 16x^2$  | 16. $4a^4 - 4b^4$          |
| 8. $9 - z^2 - 8z^4$      | 17. $5x^4 - 5y^4$          |
| 9. $a^8 - 1$             | 18. $ax^4 - 16ay^4$        |
19. Find the value of  $\frac{a^2 + 2ab + b^2}{2a + 2b}$  when  $a = -1\frac{1}{2}$ ,  $b = -\frac{1}{2}$ .
20. Find the value of  $\frac{4p^2 - q^2}{2p + q}$  when  $p = 7$ ,  $q = -1$ .
21. Write a formula for the difference in area between two squares of side  $a$  and  $b$  inches ( $a > b$ ). Evaluate the formula when  $a = 132$ ,  $b = 130$ .
22. Find the value of  $x^3 - 6x^2y + 9xy^2$  when  $x = 16$ ,  $y = 5$ .
23. One man rides north at  $x$  m.p.h. for  $2t$  hours and another man starting from the same point rides south at  $y$  m.p.h. for  $3t$  hours. Write a formula for their distance apart. Evaluate the formula when  $x = 35$ ,  $y = 50$ ,  $t = 2\frac{1}{2}$ .
24. Find the value of  $\frac{2p^2 - 8q^2}{p^2q - 4pq^2 + 4q^3}$  when  $p = \frac{1}{2}$ ,  $q = -\frac{3}{4}$ .

## Exercise [A-2]

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| <p><u>1.</u> <math>a(x + y)(x - y)</math></p> <p><u>2.</u> <math>(3x + 5)(2x + 1)</math></p> <p><u>3.</u> <math>2(3a + 5)(2a - 1)</math></p> <p><u>4.</u> <math>P^2(1 + R)(1 - R)</math></p> <p><u>5.</u> <math>(x - 7)^2</math></p> <p><u>6.</u> <math>2(8x^2 + 2x + 1)</math></p> <p><u>7.</u> <math>(ab + 4)(ab - 4)</math></p> <p><u>8.</u> <math>2(x + 3)(x - 1)</math></p> <p><u>9.</u> <math>(3a + 4)(2a - 3)</math></p> <p><u>10.</u> <math>P(1 + rt)</math></p> <p><u>11.</u> <math>(4x + 7)(3x - 5)</math></p> <p><u>12.</u> <math>(3x - 7)(4x + 5)</math></p> <p><u>13.</u> <math>(12x + 5)(x + 7)</math></p> <p><u>14.</u> <math>(12x + 7)(x + 5)</math></p> <p><u>15.</u> <math>(12x - 5)(x + 7)</math></p> <p><u>16.</u> <math>(12x + 7)(x - 5)</math></p> <p><u>17.</u> <math>(6x + 5)(2x + 7)</math></p> <p><u>18.</u> <math>(3x + 5)(4x + 7)</math></p> | <p><u>19.</u> <math>xy(x + 3y)(x - 3y)</math></p> <p><u>20.</u> <math>(1 + x^2)^2</math></p> <p><u>21.</u> <math>-(x - 3y)^2</math></p> <p><u>22.</u> <math>(5p - 2q)^2</math></p> <p><u>23.</u> <math>2(3 + 4a)(3 - 4a)</math></p> <p><u>24.</u> <math>(ab + 4)(ab - 4)(a^2b^2 + 16)</math></p> <p><u>25.</u> <math>4(3 - 2y)^2</math></p> <p><u>26.</u> <math>(1 + 4p^2)^2</math></p> <p><u>27.</u> <math>2(2x + y)(2x - 3y)</math></p> <p><u>28.</u> <math>(8r - 3)(3r + 1)</math></p> <p><u>29.</u> <math>x(x + 2)(x + 1)</math></p> <p><u>30.</u> <math>(3b + x)(2b - 3x)</math></p> <p><u>31.</u> <math>5z^2(5x + 1)(5x - 1)</math></p> <p><u>32.</u> <math>(11x - 2y)(7x + y)</math></p> <p><u>33.</u> <math>5(r - 16)(r - 10)</math></p> <p><u>34.</u> <math>(6a^2 - 7b^2)(a^2 + 2b^2)</math></p> <p><u>35.</u> <math>(4r + 9s)^2</math></p> <p><u>36.</u> <math>3(a^2 + 3)(a^2 - 3)</math></p> |
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| <p><u>37.</u> <math>(x^4 - 8)(x^4 + 8)</math></p> <p><u>38.</u> <math>x(5x - 4y)(3x - 4y)</math></p> <p><u>39.</u> <math>(3x + 40)(x - 20)</math></p> <p><u>40.</u> <math>(3z + 40)(3z - 10)</math></p> <p><u>41.</u> <math>4(2x - 3)^2</math></p> <p><u>42.</u> <math>3(ab - 5)(ab - 2)</math></p> <p><u>43.</u> <math>4r(2r + 5)(2r + 3)</math></p> <p><u>44.</u> <math>11a(a - 3b)(a + 2b)</math></p> <p><u>45.</u> <math>\frac{x}{x - y}</math></p> <p><u>46.</u> <math>\frac{2}{x + 2}</math></p> <p><u>47.</u> <math>\frac{x - 2}{x + 2}</math></p> | <p><u>48.</u> <math>\frac{x}{2(3x - 5)}</math></p> <p><u>49.</u> <math>\frac{1}{x + 2y}</math></p> <p><u>50.</u> <math>\frac{y - 3}{4}</math></p> <p><u>51.</u> <math>\frac{x + 1}{x - 2}</math></p> <p><u>52.</u> <math>\frac{3(1 - a)}{5 + a}</math></p> <p><u>53.</u> 528</p> <p><u>54.</u> -2/3</p> <p><u>55.</u> 8</p> <p><u>56.</u> <math>A = \pi(R + r)(R - r)</math><br/>2398 sq.in.</p> |
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## Exercise [B]

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| <p><u>1.</u> <math>4(z^2 + 4)(z + 2)(z - 2)</math></p> <p><u>2.</u> <math>(x + 5)(x - 5)(x^2 + 25)</math></p> <p><u>3.</u> <math>(p^2q^2 + r^2)(pq + r)(pq - r)</math></p> <p><u>4.</u> <math>(1 + 2z)(1 - 2z)(1 + z)(1 - z)</math></p> <p><u>5.</u> <math>(5a^2 + 6)(a + 1)(a - 1)</math></p> <p><u>6.</u> <math>(a + b)^2(a - b)^2</math></p> <p><u>7.</u> <math>x^2(x - 2)^2(x + 2)^2</math></p> <p><u>8.</u> <math>(9 + 8z^2)(1 + z)(1 - z)</math></p> <p><u>9.</u> <math>(a^2 + 1)(a + 1)(a - 1)(a^4 + 1)</math></p> <p><u>10.</u> <math>2(6x - 31)(3x + 8)</math></p> <p><u>11.</u> <math>(2x + 1)^2(2x - 1)^2</math></p> <p><u>12.</u> <math>3(x^2 + 4)(x + 2)(x - 2)</math></p> | <p><u>13.</u> <math>(1 - 3z)(1 + 3z)(1 - z)(1 + z)</math></p> <p><u>14.</u> <math>(3a + 1)(3a - 1)(9a^2 + 1)</math></p> <p><u>15.</u> <math>(2a + x)(2a - x)(3a^2 + x^2)</math></p> <p><u>16.</u> <math>4(a^2 + b^2)(a + b)(a - b)</math></p> <p><u>17.</u> <math>5(x^2 + y^2)(x + y)(x - y)</math></p> <p><u>18.</u> <math>a(x + 2y)(x - 2y)(x^2 + 4y^2)</math></p> <p><u>19.</u> -1</p> <p><u>20.</u> 15</p> <p><u>21.</u> <math>D = a^2 - b^2</math>; 524 sq.in.</p> <p><u>22.</u> 16</p> <p><u>23.</u> <math>d = t(2x + 3y)</math>; 550 mi.</p> <p><u>24.</u> <math>\frac{4}{3}</math></p> |
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