TEST 1, FORM A

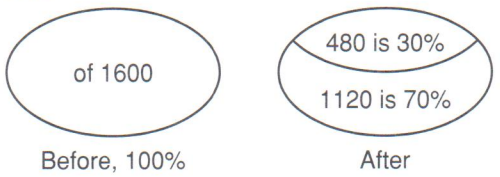
1. $m = 99$; $n = 99$; $p = 27$
2. $a = 25$; $b = 16$; $c = 50$
3. 53°
4. 97.68 m
5. 33.49 in.^{2}
6. 50.47 cm^3
7. 22 ft^2
8. 55.74 cm^2
9. 30 in.
10. $p = 47$; $q = 86$
11. $\frac{21}{4}$
12. 3052.08 in.^{3}; 1017.36 in.^{2}
13. xy^{10}
14. $x^{-6}y^{-3}z^{-7}$
15. $w^{-3}x^3y^2z^{-1}$
16. $-\frac{1}{64}$
17. −27
18. −22
19. −26
20. 44

TEST 2, FORM A

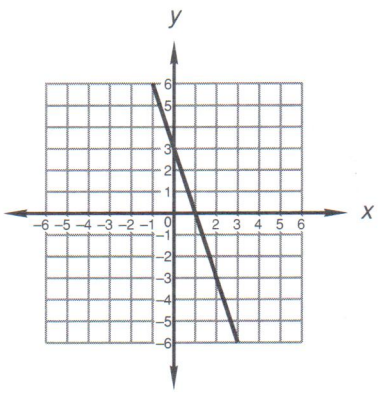
1. $y = \frac{145}{8}$; $A = 20$; $B = 24$
2. 202.43 in.^{3}
3. $x = 55$; $y = 55$; $P = 125$; $R = 27.5$; $Q = 27.5$
4. $\sqrt{86}$ ft
5. −51
6. $\frac{1}{648}$
7. $2ab^{-1} + 4ay^{-1} - 7x^{-1}y^3$
8. $5xy - 3x$
9. $x^{-5}b^{-7}$
10. $3m^4$
11. −12
12. $25\frac{7}{8}$
13. −35
14. 637.5
15. $1\frac{3}{20}$
16. $\frac{11}{6}$
17. $3a^2 - 2m^{-3}$
18. 135°
19. 7, 9, 11
20. 4302

TEST 3, FORM A

1. 1600

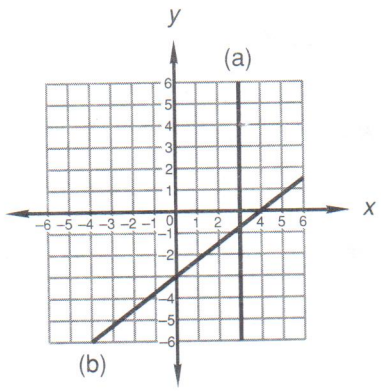


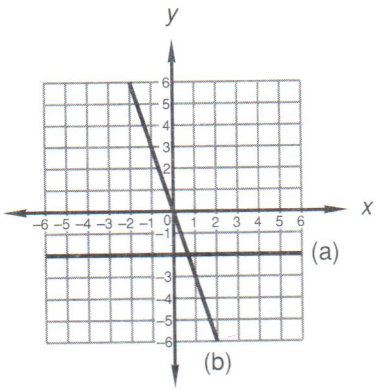
2. $100,000
3. 14, 16, 18
4. 600
5. $a = 30$; $b = 75$; $c = 40$
6. 33
7. $a = \frac{21}{4}$; $R = 106$; $T = 74$
8. $\sqrt{161}$
9. $\frac{14}{27}$
10. $-\frac{6}{11}$
11. $2c^6 - 3c^4p^{-1}$
12. $2 - 2y^4$
13. 31.4 m
14.



15. $\frac{1}{4}$
16. $-\frac{71}{72}$
17. $\frac{cx^6}{8a^5}$
18. −16
19. −19
20. $\frac{2m^3x}{a} - \frac{3m^3x^2}{a^2}$

TEST 4, FORM A

1. 20,000
2. -6
3. $-4, -2, 0$
4. $a = 30;\ b = 28$
5. 100
6. $18\sqrt{5}$ cm^2
7. (a) $y = -2$ (b) $y = -\frac{4}{3}x + 1$
8. $\frac{16y^2 + c}{4y^2}$
9. $\frac{ap + p^2y^2 + a^2y}{p^2y}$
10. $2\sqrt{10}$
11. 

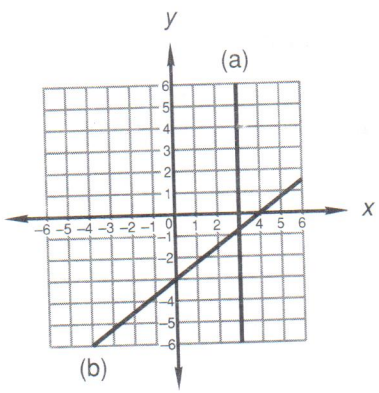
12. 2.2
13. 12
14. $\frac{1}{4} - \frac{1}{c^3}$
15. $\frac{mp^3}{16}$
16. $-\frac{9ax}{y} + \frac{6a}{xy}$
17. $11\frac{1}{9}$
18. -7
19. [illegible]
6. $\sqrt{119}$
7. 

8. $y = -\frac{3}{5}x + \frac{14}{5}$
9. $a = 25;\ x = 4;\ y = -7$
10. 80.38 in.^{2}
11. $-\frac{m^2}{n^3} + \frac{2m^3}{n}$
12. $T_B = \frac{20}{3};\ T_M = \frac{11}{3}$
13. $12x^3 - 29x^2 - x + 10$
14. $x^2 + 6x + 24 + \frac{97}{x - 4}$
15. 0
16. $\frac{3}{25}$
17. $-243ac^4$
18. $\frac{-a^3 - 5a^2}{p^3}$
19. $-\frac{67}{216}$
20. -9

TEST 6, FORM A

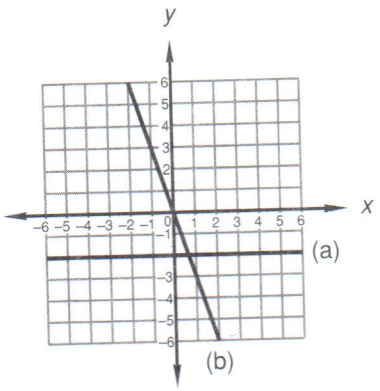
1. 300
2. 16
3. 64; 40
4. $(5, -3)$
5. $4x^2 + 4x + 4 + \frac{7}{x - 1}$
6. $\frac{4a^2m^2 + m^5c - 2a}{m^2c}$
7. (a) $x = -4$ (b) $y = \frac{1}{3}x + 3$
8. $p = \frac{36}{5};\ q = \frac{34}{5}$
9. $y = \frac{1}{2}x - \frac{3}{2}$
10. $30\sqrt{6} - 40$

TEST 4, FORM A

1. 20,000
2. -6
3. $-4, -2, 0$
4. $a = 30;\ b = 28$
5. 100
6. $18\sqrt{5}$ cm^2
7. (a) $y = -2$ (b) $y = -\frac{4}{3}x + 1$
8. $\frac{16y^2 + c}{4y^2}$
9. $\frac{ap + p^2y^2 + a^2y}{p^2y}$
10. $2\sqrt{10}$
11. 

12. 2.2
13. 12
14. $\frac{1}{4} - \frac{1}{c^3}$
15. $\frac{mp^3}{16}$
16. $-\frac{9ax}{y} + \frac{6a}{xy}$
17. $11\frac{1}{9}$
18. -7
19. $(3, -2)$
20. $y = -\frac{1}{7}x + \frac{26}{7}$

TEST 5, FORM A

1. 300
2. 110
3. 1500
4. $\left(\frac{12}{11}, \frac{63}{11}\right)$
5. $\frac{3a^3 - 3a^3c^2 - 2c^3}{3a^2c^2}$
6. $\sqrt{119}$
7. 

8. $y = -\frac{3}{5}x + \frac{14}{5}$
9. $a = 25;\ x = 4;\ y = -7$
10. 80.38 in.^{2}
11. $-\frac{m^2}{n^3} + \frac{2m^3}{n}$
12. $T_B = \frac{20}{3};\ T_M = \frac{11}{3}$
13. $12x^3 - 29x^2 - x + 10$
14. $x^2 + 6x + 24 + \frac{97}{x - 4}$
15. 0
16. $\frac{3}{25}$
17. $-243ac^4$
18. $\frac{-a^3 - 5a^2}{p^3}$
19. $-\frac{67}{216}$
20. -9

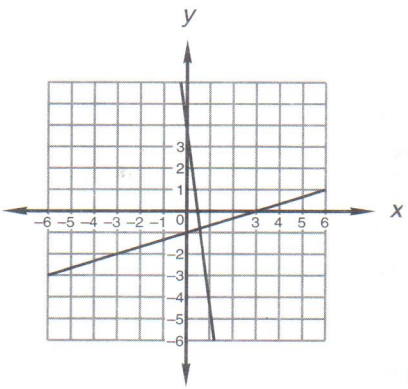
TEST 6, FORM A

1. 300
2. 16
3. 64; 40
4. $(5, -3)$
5. $4x^2 + 4x + 4 + \frac{7}{x - 1}$
6. $\frac{4a^2m^2 + m^5c - 2a}{m^2c}$
7. (a) $x = -4$ (b) $y = \frac{1}{3}x + 3$
8. $p = \frac{36}{5};\ q = \frac{34}{5}$
9. $y = \frac{1}{2}x - \frac{3}{2}$
10. $30\sqrt{6} - 40$

11. $60\sqrt{5} - 60$
12. 1×10^{-6}
13. $m = 5;\ n = 15$
14. $\frac{16}{3}$
15. $-\frac{15}{7}$
16. $3 - 15k^{-6}$
17. $27a^4b^{-2}c^4$
18. $-11m^2n^2 + 2n^2$
19. 0
20. 43

TEST 7, FORM A

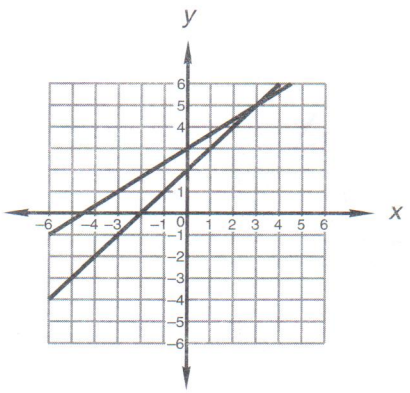
1. 800 miles
2. $N_D = 135;\ N_Q = 50$
3. 7
4. 6000
5. $4x^3 + 4x^2 + 4x + 4 + \frac{1}{x - 1}$
6. $17\sqrt{5} + 35$
7. $9\sqrt{10} - 36$
8. $2ab - 1$
9. 1×10^{10}
10. $\frac{cp^2x - xy^3 - p^2y^2}{xy}$
11. $\left(\frac{3}{5}, -\frac{4}{5}\right)$



12. $y = \frac{1}{6}x + \frac{22}{3}$
13. $x = 7;\ y = -10;\ z = \frac{45}{4}$
14. $M = \frac{40}{3};\ N = \frac{5\sqrt{11}}{3};\ P = \sqrt{11}$
15. $\frac{30}{13}$
16. $-\frac{5}{2}$
17. $9\frac{3}{7}$
18. $2c(x + 5)(x - 2)$
19. $-2bc(x - 5)(x + 4)$
20. $\frac{73}{4}$

TEST 8, FORM A

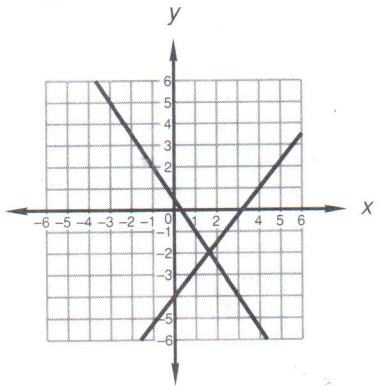
1. 58 mph
2. 18, 24, 30
3. 45
4. 37,100
5. $3x^2 + 3x + 3 - \frac{2}{x - 1}$
6. $-3y(x - 4)(x - 6)$
7. $-2a(x - 7)(x + 3)$
8. $5yz^2(x + 4)(x + 5)$
9. $1 - 3pm^2$
10. $\frac{\sqrt{3}}{4}$
11. $-25\sqrt{3}$
12. $\frac{a}{x + y}$
13. $\frac{8 - x}{(x + 5)(x - 2)}$
14. (3, 5)



15. (a) $y = -3x + 1$ (b) $y = -4$
16. $R = \frac{11\sqrt{514}}{17};\ S = \frac{165}{17};\ T = \frac{6\sqrt{514}}{17}$
17. 60
18. $-\frac{47}{22}$
19. $\frac{31}{144}$
20. 109.56 in.^{2}

TEST 9, FORM A

1. 3
2. $-8, -7, -6$
3. $N_N = 60$; $N_D = 40$
4. 240
5. $y = -\frac{2}{3}x + \frac{8}{3}$
6. $\frac{1 + y}{x - 2y}$
7. $\frac{3 - 2xp}{p^2}$
8. $\frac{-4\sqrt{35}}{35}$
9. 1.5×10^{-21}
10. $8\sqrt{6}$
11. $3ab + 1$
12. $\frac{-4x - 49}{(x - 2)(x + 7)}$
13. $a^4 + a^3 + 3a^2 - 5a$
14. $-3(x + 1)(x - 9)$
15. $-3ax(x - 5)(x - 5)$
16. $\frac{64}{5}$
17. -3
18. $50°$
19. $\left(\frac{18}{11}, -\frac{43}{22}\right)$



20. 835.5 ft^3; 612.7 ft^2

TEST 10, FORM A

1. 4 p.m.
2. $N_H = 18$; $N_P = 8$
3. 480 grams
4. 3300
5. $-\frac{1}{32}$
6. -8
7. $-\frac{82\sqrt{39}}{39}$
8. $96\sqrt{3} - 16\sqrt{5}$
9. $x = 120$; $y = 105$; $z = 170$
10. $y = -\frac{1}{9}x - \frac{23}{9}$
11. $\frac{3acz^2 + 2x^2}{x^2z^2 - 4}$
12. $\frac{x + 2}{x + 3}$
13. 12
14. $\frac{-3x^2 + 10x + 5}{(x + 2)(x - 3)}$
15. $5m^{-1} - 10t^{-1}$
16. $x^3 - 6x^2 + 12x - 8$
17. $\sqrt{82}$
18. $-\frac{27}{2}$
19. 2
20. $3, -6$

TEST 11, FORM A

1. 7
2. 8450
3. 1960 grams
4. 360
5. $A = 90$; $B = 20$; $C = 70$
6. 51.06 in.^{2}
7. $x = \frac{64}{5}$; $y = \frac{48}{5}$
8. 2×10^{-11}
9. $-\frac{175}{23}$
10. 0, 2, –13
11. $y = x + 7$
12. $\frac{bym}{a - cm}$
13. 20(5280)(5280)(5280)(12)(12)(12) in.^{3}
14. $\frac{x + 4}{x - 4}$
15. $-\frac{1}{81}$
16. $60\sqrt{2} - 60$
17. $-\frac{\sqrt{35}}{35}$

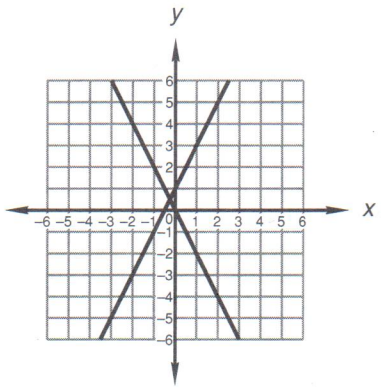
18. $x - x^4$

19. $\frac{a + 2c}{5c - 1}$

20. $\frac{58}{3}$

TEST 12, FORM A

1. 20
2. $N_D = 40$; $N_Q = 96$
3. 4000
4. 2.5
5. $A = 22.62$; $B = 67.38$; $m = 13$
6. $x = 2.80$; $y = 4.88$; $c = 55$
7. $\frac{2xc}{m + bx}$
8. $\left(-\frac{1}{4}, \frac{1}{2}\right)$



9. $\frac{2}{3} \pm \sqrt{14}$
10. $-\frac{67}{10}$
11. 0, 5, −4
12. $\frac{x + 6}{x - 3}$
13. $-\frac{68\sqrt{21}}{21}$
14. $a^{17/6}x^{5/3}$
15. $8^{3/4}$
16. $\frac{2x^2 + a^2}{y^2 - 3a^2}$
17. −8
18. 8×10^{27}
19. $y = 9x - 32$
20. $\frac{23}{72}$

TEST 13, FORM A

1. 9, 11, 13
2. 4320 grams
3. 160 miles
4. $\frac{16(60)(60)}{5280}\ \frac{\text{mi}}{\text{hr}}$
5. $y = -4x + 16$
6. $X = 40$; $P = 5.14$
7. $\frac{2cx^2}{5x - 3ac}$
8. $-4 \pm \sqrt{23}$
9. 0, 7, −9
10. 22
11. 4
12. $2^{7/6}$
13. $a^{19/6}c^{17/6}$
14. $-\frac{71\sqrt{15}}{15}$
15. $\frac{x + 3}{x + 1}$
16. 7
17. 8×10^{-8}
18. $\frac{3\sqrt{17}}{2}$
19. $v = 30$; $w = 30$; $x = 30$; $y = 60$; $z = 60$
20. 493 cm^3

TEST 14, FORM A

1. 21 liters 12%; 4 liters 37%
2. 41%
3. 480 miles
4. $-4 - 5i$
5. $1 + 7i$
6. $6^{5/6}$
7. $m^{31/15}p^{26/15}$
8. $-\frac{94\sqrt{35}}{35}$
9. −9
10. $\frac{ax^2 - a^2z^3}{xz - 3}$
11. $\frac{7}{2} \pm \frac{\sqrt{69}}{2}$
12. $\frac{41}{3}$
13. No real number solution
14. $y = x - 9$
15. $8\sqrt{2}$

16. $\dfrac{300(5280)(5280)(12)(12)(2.54)(2.54)}{(100)(100)(1000)(1000)}$ km^2

17. $\dfrac{ce}{cf + 3ac - m}$

18. $\dfrac{ay}{b}$

19. $a = 50$; $b = 102$; $c = 28$; $d = 50$

20. $4.01R + 4.46U$

TEST 15, FORM A

1. $64\dfrac{\text{N}}{\text{m}^2}$

2. $-2, 0, 2$ and $10, 12, 14$

3. 40 liters 25%; 80 liters 10%

4. 140 grams

5. $\dfrac{fp}{x - k - pm}$

6. $-1.04R - 5.91U$

7. $\dfrac{30(12)(2.54)(60)(60)}{100}\dfrac{\text{m}}{\text{hr}}$

8. $\dfrac{1}{3} \pm \dfrac{\sqrt{31}}{3}$

9. $\dfrac{33}{4}$

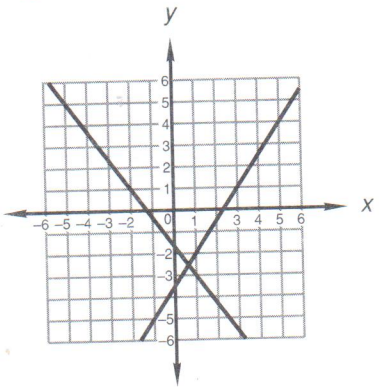
10. -13

11. (a) 35 (b) 100

12. 226.44 m^3

13. $\sqrt{13}$

14. $\left(\dfrac{2}{3}, -\dfrac{5}{2}\right)$



15. $5i$

16. $3^{7/10}$

17. $m^{29/12}a^{31/12}$

18. $-\dfrac{1}{16}$

19. $\dfrac{(x - 5)(x + 2)(x - 3)}{(x - 2)(x + 5)(x - 4)}$

20. $\dfrac{b^3c - em^2}{4m - bc}$

TEST 16, FORM A

1. 17,440 torr

2. 50 gallons

3. 17

4. $K = 0.4Cl - 3$

5. (8, 4)

6. $6R - 10.4U$

7. $5\angle 233.13°$

8. $\dfrac{2}{3} \pm \dfrac{\sqrt{11}}{3}i$

9. 0, 7, 8

10. $\dfrac{19}{2}$

11. $\dfrac{4xq - 2y(c + pq)}{3(c + pq)}$

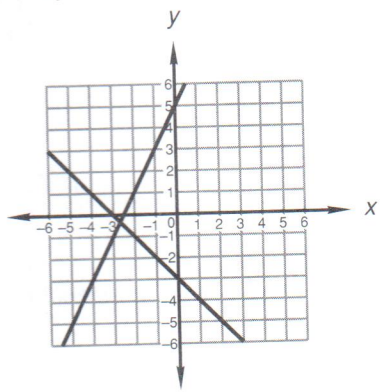
12. $\dfrac{10(100)(100)(100)}{(2.54)(2.54)(2.54)}$ in.^{3}

13. $a = \dfrac{9}{32}$; $x = 12$; $y = -8$

14. $4\sqrt{5}$

15. $y = -\dfrac{3}{2}x + \dfrac{31}{2}$

16. $\left(-\dfrac{8}{3}, -\dfrac{1}{3}\right)$



17. $-1 - 16i$

18. $-\dfrac{631\sqrt{70}}{70}$

19. $2(5^{3/4})$

20. -32

TEST 17, FORM A

1. 200
2. $480 \frac{N}{m^2}$
3. 300 pounds 24%; 600 pounds 12%
4. $2\sqrt{10}\angle 342°$
5. $19.51R + 25.30U$
6. (10, 5)
7. $\frac{1}{3} \pm \frac{\sqrt{11}}{3}i$
8. $\frac{9}{11}$
9. 146,880 in.^{2}
10. $C = 0.13S + 6$
11. $\frac{af - bdf - be}{e + df}$
12. $2 - \sqrt{10} - 6i$
13. $29 - 29i$
14. $a^{3/4}$
15. $2^{7/4}$
16. $\frac{7 - x}{x - 3}$
17. $R_B = 240$; $R_F = 40$; $T_B = 2$; $T_F = 4$
18. $\frac{200(100)(100)(100)(60)}{(2.54)(2.54)(2.54)} \frac{\text{in.}^3}{\text{min}}$
19. $\frac{3am + 2a^2 + 5m^2}{m(3m + 2a)}$
20. $p = \frac{5}{2}$; $q = \frac{5\sqrt{3}}{2}$

TEST 18, FORM A

1. 3×10^{11} K
2. 7200 ml 80%; 4800 ml 40%
3. $-8, -7, -6$
4. $2 - \sqrt{3}$
5. $-\frac{178\sqrt{35}}{35}$
6. $a^{11/15}y^{28/15}$
7. $\frac{x - 10}{(x + 3)(x - 3)}$
8. $0R - 9.90U$
9. $\sqrt{13}\angle 326.31°$
10. $R_C = 40$; $R_M = 80$; $T_C = 9$; $T_M = 6$
11. $\frac{bx^2 + 2x + 3b^2}{bx + 2}$
12. $-9 - 18i$
13. (10, 20)
14. $\frac{3}{4} \pm \frac{\sqrt{47}}{4}i$
15. $-\frac{77}{25}$
16. $7(3)(3)(3)(60) \frac{\text{ft}^3}{\text{min}}$
17. $\frac{bch - aehy + 3bef}{ahy - 3bf}$
18. $y = -\frac{3}{4}x + \frac{3}{4}$
19. (a) 3.83×10^{14} (b) 3.46
20. $m\widehat{XZ} = 125°$; $m\widehat{YZ} = 125°$; $32\sqrt{21}$ units^2

TEST 19, FORM A

1. 180 K
2. $R_C = 15$ mph; $R_K = 5$ mph; $T_C = 6$ hr; $T_K = 8$ hr
3. $N_B = 14$; $N_R = 12$
4. $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
5. $-\frac{1}{2} \pm \frac{\sqrt{5}}{2}i$
6. (a) 45° (b) 50°
7. $\frac{pm_2}{xkm_1m_2 + pm_1}$
8. $\frac{3x^2 - 3x - 5}{(x - 2)(x + 5)}$
9. $4\sqrt{3} - 3\sqrt{6} - 6\sqrt{2} + 8$
10. $-3^{9/4}$
11. $xa^{7/4}y^{5/2}$
12. 225
13. $\frac{xc^2 - xc - 2}{xc - x}$
14. $-10 - 10i$
15. $y = -\frac{4}{5}x + \frac{7}{5}$
16. $C = 0.4I - 4$
17. (a) $3\sqrt{2}\angle 135°$ (b) $1.5R - 2.6U$
18. $\frac{1}{3} \pm \frac{\sqrt{11}}{3}i$
19. $\frac{43}{2}$
20. $\frac{2\sqrt{74}}{5}$