

EXERCISES CXXVIII. Pages 322—323.

A 1. $97x^2 - 53x - 17 = 0$. **2.** $2(-1 \pm \sqrt{-3})$. **4.** $x^3 + 2x^2 - 3x + 1$.

5. $(1, 2, 3)$, $(3, 2, 1)$, $\{(6 \pm \sqrt{-3}) + 3, (6 \mp 2\sqrt{-3}) + 3, (6 \pm \sqrt{-3}) \div 3\}$, $(-1, -2, -3)$, $(-3, -2, -1)$, $\{(-6 \pm \sqrt{-3}) + 3, (-6 \mp 2\sqrt{-3}) + 3, (-6 \pm \sqrt{-3}) \div 3\}$.

B 1. For $x = \frac{2}{3}$ and $3\frac{4}{9}$; for $\frac{2}{3} < x < 3\frac{4}{9}$; for $x < \frac{2}{3}$ and for $x > 3\frac{4}{9}$.

3. Each = sum of x and y multiples of numerators divided by the x and y multiples of denominators, etc. **5.** 72.

C 1. $(x-y)(x+y)(x+y-a)(x+y+a)$. **2.** 1. **3.** $3, (3 \pm \sqrt{3}) \div 2$.

5. $33\frac{1}{2}$ mi. an hour; $48\frac{1}{2}$ mi.

D 1. (i) $(x+3+\sqrt{2})(x+3-\sqrt{2})$; (ii) $(x-\frac{5}{2}+\sqrt{\frac{1}{4}})(x-\frac{5}{2}-\sqrt{\frac{1}{4}})$.

2. A circle of radius 5. **4.** b is zero, and then the common factor is x , or b is 9 and then the common factor is $x+3$. **5.** 5.

E 2. (i) $(\frac{1}{l} + \frac{1}{m} + \frac{1}{n})$ of work; (ii) $\frac{lmn}{mn+nl+lm}$ da. **3.** $(2, 1)$,

$(-2, -1)$, $(\pm 6 \div \sqrt{569}, \mp 25 \div \sqrt{569})$. **4.** (i) $(2x-3y-5z)(x+5y-3z)$; (ii) $(x+1)(x^2+p-1x+1)$.

F 1. 8 mi. and 10 mi. an hr. **3.** 1, $c(a-b)+a(b-c)$. **4.** (i) $x^3+9x^2+23x+15$; (ii) $x^2-2bx+b^2-y^2+2ay-a^2$.

G 1. $(4, -3)$, $(-3, 4)$. **3.** 5, 7. **4.** (i) $(5x-2y)(2x+3y)$; (ii) $(3x-2y+z)(x+2y-3z)$. **5.** $5(x-3)^2+37(x-3)+148(x-3)+91$.

H 1. $6\frac{1}{2}$. **2.** Not true of $\frac{1}{2}$. **3.** Equals 4. **4.** $(\frac{a}{2}, \frac{b}{3})$.

I 3. \$1.00 and $6\frac{2}{3}$ c. a lb. **4.** $m=3$ and the two roots are 3 and 3, or $m=5$ and the two roots are 5 and 5.

J 1. (i) $(a+b+c) \div 3$; (ii) $\sqrt[3]{\frac{2401}{8}}$. **2.** 27. **4.** (i) $(ax-b)(cx^2-dx+c)$; (ii) $(x-1)(x+2)(x-4)(2x+3)$. **5.** $-\frac{9}{8}$; minimum for $x = \frac{9}{8}$.

K 2. $(+5, +7)$, $(+7, +5)$, $(-5, -7)$, $(-7, -5)$. **3.** The latter excludes the solution $(x=0, y=0)$ of the former. **5.** $(x-1)^4+5(x-1)^3+10(x-1)^2+10(x-1)+5(x-1)$.