Matematica ed elementi di statistica

Corso di laurea in Scienze e tecnologie per i beni culturali - a.a. 2014-15

Soluzioni Esercizi 2: Equazioni e disequazioni

Equazioni di primo grado intere

1) $S = \left\{\frac{6}{17}\right\}$
2) $S = \{-16\}$
3) $S = \emptyset$
4) $S = \mathbb{R}$
5) $S = \{0\}$
6) $S = \{1\}$
7) $S = \{-28\}$
8) $S = \mathbb{R}$
9) $S = \{-2\}$
10) $S = \emptyset$

Equazioni di primo grado fratte

11) $S = \{0\}$
12) $S = \emptyset$
13) $S = \{4\}$
14) $S = \{2\}$
15) $S = \left\{-\frac{1}{30}\right\}$
16) $S = \left\{-\frac{11}{9}\right\}$
17) $S = \emptyset$
18) $S = \{1\}$
19) $S = \left\{\frac{11}{5}\right\}$
20) $S = \left\{-\frac{7}{2}\right\}$

Disequazioni di primo grado intere

1) $x > \frac{1}{4}$
2) $x < -\frac{1}{3}$
3) $x < 5$
4) $\nexists x \in \mathbb{R}$
5) $x < \frac{1}{5}$
6) $x < \frac{9}{7}$
7) $\forall x \in \mathbb{R}$
8) $x > -\frac{8}{9}$
9) $x \leq 3$
10) $\nexists x \in \mathbb{R}$

Disequazioni fratte

1) $x < -1 \vee x \geq 0$
2) $x < -2 \vee x > \frac{5}{2}$
3) $-\frac{1}{5} < x < 1$
4) $x < -7 \vee x > 1$
5) $-\frac{20}{7} < x < -\frac{1}{2}$
6) $x > \frac{1}{2}$
7) $-2 < x < \frac{15}{7}$
8) $0 \leq x < 6$
9) $x < -1 \vee x \geq \frac{1}{2}$
10) $-\frac{2}{9} < x < \frac{2}{3}$

Sistemi di disequazioni

1) $\nexists x \in \mathbb{R}$
2) $\nexists x \in \mathbb{R}$
3) $x > 6$
4) $\forall x \in \mathbb{R}$
5) $-\frac{9}{4} < x \leq -\frac{4}{11}$
6) $-\frac{4}{5} < x < \frac{2}{3}$
7) $\nexists x \in \mathbb{R}$
8) $\forall x \in \mathbb{R}$
9) $\nexists x \in \mathbb{R}$
10) $x = 1$

Equazioni di secondo grado intere

1) $S = \left\{\frac{1}{2}, 1\right\}$
2) $S = \left\{-\frac{3}{2}\right\}$
3) $S = \{0,5\}$
4) $S = \{\pm 1\}$
5) $S = \{\pm 3\}$
6) $S = \emptyset$
7) $S = \left\{-\frac{16}{3}, \frac{5}{3}\right\}$
8) $S = \left\{0, \frac{5}{2}\right\}$
9) $S = \left\{2 \pm \sqrt{6}\right\}$
10) $S = \left\{-3, \frac{24}{7}\right\}$

Disequazioni di secondo grado intere

1) $\frac{1}{3} < x < \frac{1}{2}$
2) $\frac{-1-\sqrt{21}}{2} < x < \frac{-1+\sqrt{21}}{2}$
3) $x < -\frac{5}{2} \vee x > -1$

4) $\nexists x \in \mathbb{R}$
5) $x \neq 1$
6) $x = 4$
7) $\nexists x \in \mathbb{R}$
8) $x < -\frac{9}{10} \vee x > 10$
9) $x < -2 \vee x > -1$
10) $\forall x \in \mathbb{R}$

Disequazioni di secondo grado fratte

1) $x < -\frac{3}{2} \vee 4 < x < 5 \vee x > 6$
2) $x < -3 \vee \frac{-9-\sqrt{21}}{6} < x < \frac{-9+\sqrt{21}}{6} \vee x > 2$
3) $\nexists x \in \mathbb{R}$
4) $-2 < x < \frac{1}{2} \vee 2 < x < 5$
5) $x < -3 \vee -\frac{1}{2} < x < 2$
6) $\left(x < \frac{1}{2} \wedge x \neq 1\right) \vee x > 1$
7) $x < 1 \vee 2 < x < 3$
8) $0 < x < \frac{1}{6}$
9) $-3 < x < -\frac{6}{5} \vee x > 2$
10) $-3 < x < -1 \vee x > \frac{3}{5}$

Equazioni con il valore assoluto

1) $S = \left\{\frac{4}{5}, 6\right\}$
2) $S = \emptyset$
3) $S = \left\{\frac{3}{4}\right\}$
4) $S = \{1\}$
5) $S = \{-3, 4\}$
6) $S = \{-2, 3\}$
7) $S = \{2\}$
8) $S = \left\{\frac{-1-\sqrt{17}}{2}, \frac{-1+\sqrt{17}}{2}\right\}$
9) $S = \emptyset$
10) $S = \{2, 3\}$

Disequazioni con il valore assoluto

1) $1 \leq x \leq 7$
2) $S = \emptyset$
3) $-2 < x < 2$
4) $x \leq -\frac{1}{5} \vee x \geq 9$
5) $2 < x < 3$
6) $x < \frac{11}{5}$
7) $x > -\frac{1}{2}$

8) $x < -\frac{3}{7}$
9) $\frac{1}{2} \leq x \leq 1 \vee x \geq 5$
10) $\frac{5-\sqrt{37}}{6} < x < \frac{5+\sqrt{37}}{6}$

Equazioni irrazionali

1) $S = \{-1\}$
2) $S = \emptyset$
3) $S = \left\{\frac{9-\sqrt{65}}{8}\right\}$
4) $S = \{13 - \sqrt{22}\}$
5) $S = \{-3, 2\}$
6) $S = \{-1\}$
7) $S = \{4\}$
8) $S = \left\{-\frac{9}{4}\right\}$
9) $S = \{2\}$
10) $S = \{0, 1\}$

Disequazioni irrazionali

1) $\frac{2}{3} \leq x < 2$
2) $x \geq 3$
3) $-\frac{4}{3} \leq x \leq -1 \vee x \geq 0$
4) $S = \emptyset$
5) $S = \emptyset$
6) $0 \leq x < \frac{3}{5}$
7) $x < -\frac{13}{6}$
8) $x < \frac{1}{3}$
9) $x < \frac{5}{3}$
10) $S = \mathbb{R}$