IB SL1

17-09-21-T11

Solve each equation by completing the square. Have a calculator handy for annoying arithmetic.

1) $4b^2 - 12b - 19 = 8$

2) $x^2 + 5x - 16 = -9$

3) $6n^2 - 8n - 46 = 5$

4) $r^2 - 3r - 45 = -2$

5) $6n^2 - 8n = 8$

6) $5x^2 - 6x - 31 = -3$

7) $n^2 + 9n - 90 = -7$

8) $v^2 + 7v - 13 = -9$

9) $8b^2 - 7b - 85 = 7$

10) $10x^2 - 10x - 25 = -5$

11) $4n^2 - 14n - 16 = 5$

12) $10n^2 - 14n - 29 = -5$

13) $m^2 + 3m - 20 = 8$

14) $2n^2 - 14n + 3 = -3$

15) $b^2 + 5b - 72 = 2$

16) $p^2 + 7p - 29 = 7$

17) $x^2 - 3x - 32 = 8$

18) $a^2 + 13a - 23 = 5$

19) $n^2 + 17n + 33 = -4$

20) $n^2 + 5n - 67 = 4$

Answers to 17-09-21-T11

1) $\left\{\frac{9}{2}, -\frac{3}{2}\right\}$

2) $\left\{\frac{-5+\sqrt{53}}{2}, \frac{-5-\sqrt{53}}{2}\right\}$

3) $\left\{\frac{4+\sqrt{322}}{6}, \frac{4-\sqrt{322}}{6}\right\}$

4) $\left\{\frac{3+\sqrt{181}}{2}, \frac{3-\sqrt{181}}{2}\right\}$

5) $\left\{2, -\frac{2}{3}\right\}$

6) $\left\{\frac{3+\sqrt{149}}{5}, \frac{3-\sqrt{149}}{5}\right\}$

7) $\left\{\frac{-9+\sqrt{413}}{2}, \frac{-9-\sqrt{413}}{2}\right\}$

8) $\left\{\frac{-7+\sqrt{65}}{2}, \frac{-7-\sqrt{65}}{2}\right\}$

9) $\left\{\frac{7+\sqrt{2993}}{16}, \frac{7-\sqrt{2993}}{16}\right\}$

10) $\{2, -1\}$

11) $\left\{\frac{7+\sqrt{133}}{4}, \frac{7-\sqrt{133}}{4}\right\}$

12) $\left\{\frac{12}{5}, -1\right\}$

13) $\{4, -7\}$

14) $\left\{\frac{7+\sqrt{37}}{2}, \frac{7-\sqrt{37}}{2}\right\}$

15) $\left\{\frac{-5+\sqrt{321}}{2}, \frac{-5-\sqrt{321}}{2}\right\}$

16) $\left\{\frac{-7+\sqrt{193}}{2}, \frac{-7-\sqrt{193}}{2}\right\}$

17) $\{8, -5\}$

18) $\left\{\frac{-13+\sqrt{281}}{2}, \frac{-13-\sqrt{281}}{2}\right\}$

19) $\left\{\frac{-17+\sqrt{141}}{2}, \frac{-17-\sqrt{141}}{2}\right\}$

20) $\left\{\frac{-5+\sqrt{309}}{2}, \frac{-5-\sqrt{309}}{2}\right\}$