Question 1:
1.1 19. ✓
1.2 64 ✓
1.3 $\frac{5}{6}$ ✓
1.4 $\sqrt{-16}$ ✓
1.5 $-0.234...$ ✓

Question 2:
2.1
\[
\begin{array}{c}
2 & 324 \\
2 & 162 ✓ \\
3 & 81 \\
3 & 27 ✓ \\
3 & 9 ✓ \\
3 & 3 ✓ \\
\hline
1
\end{array}
\]

\[324 = 2^2 \times 3^4 ✓\] (3)

2.2
\[
\begin{array}{c}
\sqrt{324} \\
\sqrt{2^2 \times 3^4} ✓
\end{array}
\]

\[= 2 \times 3^2 ✓ = 18 ✓\] (3)

Question 3:
3.1
\[-9 + 5 - 4 = -8 ✓\] (2)

3.2
\[-4 + 8 \div 6 ✓ = \frac{2}{6} = \frac{1}{3} ✓\] (3)

3.3
\[6 - (-2) + 1 = 6 + 2 + 1 = 9 ✓\] (4)

Question 4:
4.1
\[
\frac{4 + 9 + \sqrt{3}}{5 + 10} = \frac{8 + 9 + 3}{10} ✓
\]

\[= \frac{20}{10} ✓ = 2 ✓\] (3)

P.T.O.
4.2. \[ \frac{2}{3} \times \left[ \frac{25}{6} \right] = \frac{10}{9} \]

**Question 5:**

5.1. \[ 10x \]
5.2. \[ (6a^5b^3)(-a^9b^3) = -6a^{14}b^6 \]
5.3. \[ \frac{5p^3p^6q^{10}}{10pq^3} = \frac{p^8}{2q^3} \]

**Question 6:**

6.1. \[ 11, 7, 3, -1, -5, -4, -4 \]
6.2. \[ T_n = 11 + (n-1)(-4) \]
6.3. \[ T_{120} = -4(120) + 15 \]
6.4. \[ -189 = -4n + 15 \]
\[ 204 = -4n \]
\[ 51 = n \]

**Question 7:**

7.1. \[ 8x^5 - 5x^3 - 4x + 9 \]
7.2. \[ 4 \]
7.3. \[ -5 \]
7.4. \[ 8(-1)^5 - 5(-1)^3 - 4(-1) + 9 = 10 \]
**Question 8:**

8.1. \( (4x)^2 \) \( \sqrt{2} \)

8.2. \( \frac{2p + \sqrt{9}}{\sqrt{2}} \)

8.3. \( \frac{3a}{b} = 4 \)

**Question 9:**

9.1. \( 3^3 \cdot 4^3 \sqrt{2} \)

9.2. \( 6x^6 - 10x^4 \sqrt{2} \)

9.3. \( 4x^2 - 6x^2 + 2x^4 \sqrt{2} \)

9.4. \( \frac{\sqrt{2x^3y^2 + 4xy^2}}{\sqrt{2x^4y^2}} - \frac{10x^2y^3}{2xy^2} \)

9.5. \( x^2 + 2 - x \sqrt{2} \)

**Question 10:**

10.1. \( x = 1 \) \( \sqrt{2} \)

10.2. \( x - 2x = -6 - 4 \sqrt{2} \)

10.3. \( 3x - 6 = 20 - 10x + 7 \) \( \sqrt{2} \)

10.4. \( 3x = 49 \sqrt{2} \)

10.5. \( 2x - 3 = 15 \) \( \sqrt{2} \)

10.6. \( x^2 = 9 \) \( \sqrt{2} \)

10.7. \( x = \pm 3 \) \( \sqrt{2} \)
**QUESTION 11:**

11.1. \[ a = 60^\circ \quad \checkmark \quad (\text{equilateral } \triangle) \]

11.2. \[ b + c = 90^\circ \quad \checkmark \quad (= \text{sum of opp. sides}) \]

\[ b = 0 \]

\[ b = c = 45^\circ \quad \checkmark \quad (\text{sum of } \triangle) \]

11.3. \[ d = 147^\circ \quad \checkmark \quad (\text{ext. } \angle \text{ of } \triangle) \]

**QUESTION 12:**

12.1. \[ x^2 = 4^2 + 3^2 \quad \text{Pythagoras} \]

\[ x^2 = 25 \quad \checkmark \]

\[ x = 5 \quad \checkmark \]

12.2. \[ y^2 = 24^2 + 10^2 \quad \text{Pythagoras} \]

\[ y^2 = 676 \quad \checkmark \]

\[ \sqrt{676} = y \quad \checkmark \]

\[ 26 = y \quad \checkmark \]

\[ 10^2 = z^2 + 8^2 \quad \text{Pythagoras} \]

\[ 100 = z^2 + 64 \]

\[ 100 - 64 = z^2 \quad \checkmark \]

\[ 36 = z^2 \]

\[ 6 = z \quad \checkmark \]