1) Answer: C

Explanation: We can solve the given quadratic equation by factoring:

$2x^2 - x - 1 = 0$		
$(2x + 1)(x - 1) = 0$		*by factoring*
$2x + 1 = 0$	$x - 1 = 0$	*equating each factor to 0*
$2x = -1$	$x = 1$	*solving the resulting linear equations*
$x = -½$	$x = 1$	

Thus, the answers are -½ and 1

2) Answer: A

Explanation: We can solve the given quadratic equation by extracting the square root:

$(x + 3)^2 - 25 = 0$		
$(x + 3)^2 = 25$		*Transposition Method*
$\sqrt{(x + 3)^2} = \sqrt{25}$		*Take the square root of both sides*
$x + 3 = \pm 5$		
$x + 3 = 5$	$x + 3 = -5$	*Solve the resulting linear equations*
$x = -3 + 5$	$x = -3 - 5$	
$x = 2$	$x = -8$	

3) Answer: C

Explanation: The question is asking us to determine the value of 1/p + 1/q given that *p* and *q* are the roots of $x^2 - 5x + 7 = 0$.

We can determine the value of 1/p + 1/q without actually solving for the values of *p* and *q*.

If we simplify *1/p + 1/q*, we will obtain the following:

$$\frac{1}{p} + \frac{1}{q}$$

To add 1/p and 1/q, we make them similar fractions using their Least Common Denominator. Their LCD is pq, so we set their denominators as *pq*:

$$\frac{}{pq} + \frac{}{pq}$$

To obtain the numerators of the similar fractions, we divide the new denominator (pq) by the old denominator (p for 1/p and q for 1/q) and multiply it by 1.

For 1/p : pq ÷ p = q
For 1/q: pq ÷ q = p

Thus, the new fractions are:

$$\frac{q}{pq} + \frac{p}{pq}$$

Adding the expressions:

$$\frac{q}{pq} + \frac{p}{pq} = \frac{q+p}{pq} = \frac{p+q}{pq}$$

Thus, 1/p + 1/q is equivalent to *(p + q)/pq*

If you look closely, *p + q* implies the sum of *p* and *q*. Thus *p + q* is the sum of the roots of $x^2 - 5x + 7 = 0$. Meanwhile, *pq* is the product of the roots of the said equation.

Recall that the sum of the roots can be determined using the formula $\frac{-b}{a}$
The values of *b* and *a* in $x^2 - 5x + 7 = 0$ are -5 and 1 respectively. Thus, the sum of the roots *p + q* is:

$p + q = \frac{-b}{a} =$ -(-5)/1 = 5/1 = 5

Meanwhile, the product of the roots can be determined using the formula $\frac{c}{a}$.
The values of *c* and *a* in $x^2 - 5x + 7 = 0$ are 7 and 1 respectively. Therefore, the product of the roots is:

pq = $\frac{c}{a}$= 7⁄1 = 7

Recall that earlier, we have simplified 1/p + 1/q as (p + q)/pq

Substituting what we have obtained above for *p* + *q* and *pq*:

(p + q)/pq = 5/7

The answer is 5/7.

4) Answer: A
Explanation: Let us compute the discriminant of $5x^2 - 2x - 1 = 0$ to easily determine the nature of its roots.

$D = b^2 - 4ac$ *formula for discriminant*
$D = (-2)^2 - 4(5)(-1)$
$D = 24$

We have obtained the value of the discriminant of the equation which is 24. This means that our discriminant is greater than 0 or positive. If the discriminant is positive, then the roots of the quadratic equation are real and distinct.

5) Answer: A

Explanation: You can actually answer the given problem by trial and error since you can just test each given pair of numbers and see if their product is equal to 150. This method is actually easier than solving a quadratic equation.

But let us try to solve the given problem using a quadratic equation:

Let *x* be the first number. Since the sum of the first number and the second number is 25, we can express the second number as *25 - x*.

The product of these numbers is 150. Thus:

$$x(25 - x) = 150$$

By the distributive property:

$$25x - x^2 = 150$$

We have now a quadratic equation. Let us write it in standard form:

$$-x^2 + 25x - 150 = 0$$

Let us multiply both sides by -1 so that our first term is positive:

$$x^2 - 25x + 150 = 0$$

By factoring:

$$(x - 10)(x - 15) = 0$$

Equating each factor to 0:

$$x - 10 = 0 \qquad x - 15 = 0$$
$$x = 10 \qquad x = 15$$

Thus, the numbers are 10 and 15.