

**PROGRAM TITLE:Find the roots of a Quadratic Equation.**

**THEORY:**

A Quadratic Equation is of the form  $ax^2+bx+c$ . Applying Sridharacharya's Formula, we get the roots of the equation by

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

**PROGRAM CODE:**

```
#Shell Program to find the roots of a Quadratic Eqn.
echo A Quadratic Equation is of the form ax^2+bx+c=0
read -p "Enter the variable a::" a
read -p "Enter the variable b::" b
read -p "Enter the variable c::" c
z=`expr "scale=3;$b * $b - 4 * $a * $c"|bc`
if [ $z -gt 0 ]
then
d=`expr "scale=3;sqrt($z)"|bc`
x=`expr "scale=2;(-$b + $d)/( 2 * $a)"|bc`
y=`expr "scale=2;(-$b - $d)/( 2 * $a)"|bc`
echo "The roots are::" $x $y
else
echo "The roots are Imaginary."
fi
```

**OUTPUT:**

**Set 1:**

```
A Quadratic Equation is of the form ax^2+bx+c=0
Enter the variable a::2
Enter the variable b::6
Enter the variable c::3
The roots are:: -.63 -2.36
```

**Set 2:**

```
A Quadratic Equation is of the form ax^2+bx+c=0
Enter the variable a::2
Enter the variable b::8
Enter the variable c::3
The roots are:: -.41 -3.58
```

**DISCUSSION:**

1. To deal with fractional data, we have to use a basic calculator function and have to specify the number of decimal places required using "scale=x".
2. Shell is particularly strict with spaces.
3. Shell uses an Interpreter.