

Chapter 14 / **Example 13**

Calculating with the inverse normal function

Given that $Z \sim N(0,1)$, use your GDC to find a when:

a $P(Z < a) = 0.877$

b $P(Z > a) = 0.2$

c $P(Z > a) = 0.55$

d $P(-a < Z < a) = 0.42$

Press **2nd** **vars** (**[distr]**) 3:invNorm(
Enter the Area 0.877
Navigate to Paste and press **enter**.

```
invNorm
area:0.877
μ:0
σ:1
Paste
```

Press **enter**.
 $a = 1.16$

```
invNorm(0.877,0,1)
.....1.160119882
```

If $P(Z > a) = 0.2$ then $P(Z < a) = 1 - 0.2 = 0.8$

Press **2nd** **vars** (**[distr]**) 3:invNorm(
Enter the Area 0.8
Navigate to Paste and press **enter**.

```
invNorm
area:0.8
μ:0
σ:1
Paste
```

$a = 0.842$

```
invNorm(0.8,0,1)
......8416212335
```

If $P(Z > a) = 0.55$ then $P(Z < a) = 1 - 0.55 = 0.45$

Press **2nd** **vars** (**[distr]**) 3:invNorm(
Enter the Area 0.45
Navigate to Paste and press **enter**.

```
invNorm
area:0.45
μ:0
σ:1
Paste
```

$a = -0.126$

```
invNorm(0.45,0,1)
.....-.1256613375
```

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If $P(-a < Z < a) = 0.42$ then $P(Z < a) = 1 - \frac{1}{2}(1 - 0.42) = 0.71$

Press **2nd** **vars** (**[distr]**) 3:invNorm(

Enter the Area 0.71

Navigate to Paste and press **enter**.

```

invNorm
area:0.71
μ:0
σ:1
Paste
  
```

$a = 0.553$

```

invNorm(0.71,0,1)
.....5533847152
  
```