

# Chapter 13 / Example 9

## Normal distribution

If  $X \sim N(10, 4)$  find

**a**  $P(9 < X < 12)$

**b**  $P(X < 13)$

**c**  $P(X > 7)$

Press **2nd** **vars** (**[distr]**) 2:normalcdf(.

Set the Lower bound to 9, the Upper Bound to 12,  $\mu$  to 10 and  $\sigma$  to 2.

Navigate to Paste and press **enter**.

```
normalcdf
lower: 9
upper: 12
μ: 10
σ: 2
Paste
```

Press **enter**.

$P(9 < X < 12) = 0.533$ .

```
normalcdf(9,12,10,2)
.5328072082
```

Press **2nd** **vars** (**[distr]**) 2:normalcdf(.

Set the Lower bound as  $-1E99$ , the Upper Bound to 13 and leave  $\mu$  as 10 and  $\sigma$  as 2.

$-1E99$  means  $-1 \times 10^{99}$  - a very small number. To enter E, press **2nd** **,** **[EE]** [format]

Navigate to Paste and press **enter**.

```
normalcdf
lower: -1E99
upper: 13
μ: 10
σ: 2
Paste
```

Press **enter**.

$P(X < 13) = 0.933$ .

```
normalcdf(9,12,10,2)
.5328072082
normalcdf(-1E99,13,10,2)
.9331927713
```

## Chapter 13 / Example 9

# Normal distribution

Press **2nd** **vars** (**[distr]**) 2:normalcdf(.

Set the Lower bound to 7, the Upper Bound to 1E99 and leave  $\mu$  as 10 and  $\sigma$  as 2.

1E99 means  $1 \times 10^{99}$  - a very large number.

To enter E press **2nd** **[ ]** **[EE]**.

Navigate to Paste and press **enter**.

```
normalcdf
lower:7
upper:1E99
μ:10
σ:2
Paste
```

Press **enter**.

$P(X > 7) = 0.933$ .

```
normalcdf(9,12,10,2)
.5328072082
normalcdf(-1E99,13,10,2)
.9331927713
normalcdf(7,1E99,10,2)
.9331927713
```