



Society of Actuaries in Ireland

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## **Algebra 2**

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Wed 25<sup>th</sup> November 2020

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# Material from tonight

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- Slides, questions and solutions available on our website from tomorrow
- Google '**actuaries.ie maths tutorials**' to find it

# Surds

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$$\sqrt{ab} = \sqrt{a}\sqrt{b}$$

$$\sqrt{\left(\frac{a}{b}\right)} = \frac{\sqrt{a}}{\sqrt{b}}$$

$$\sqrt{a}\sqrt{a} = a$$

## **-b Formula**

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- $ax^2 + bx + c = 0$

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

# Inequalities

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- If multiplying/dividing by  $-1$ , make sure you reverse the sign!
  - E.g., ' $>$ ' changes to ' $<$ '
- Rational inequalities: multiply both sides by (denominator)<sup>2</sup>
  - E.g.,  $\frac{2x+1}{x-3} > 3$   $\rightarrow$  multiply both sides by  $(x-3)^2$

# Logs

## Logarithms

General rule of logs:  $a = b^c \Leftrightarrow \log_b a = c$

$$\log_a(xy) = \log_a x + \log_a y$$

$$\log_a\left(\frac{1}{x}\right) = -\log_a x$$

$$\log_a\left(\frac{x}{y}\right) = \log_a x - \log_a y$$

$$\log_a(a^x) = x$$

$$\log_a x^q = q \log_a x$$

$$a^{\log_a x} = x$$

$$\log_a 1 = 0$$

$$\log_b x = \frac{\log_a x}{\log_a b}$$

# Next Tutorial

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- **Wed 2<sup>nd</sup> December 2020**
- **6.30pm - 8.00 pm**
- **Topic : Geometry 2**