

2021 ATP: Grade 11 – Term 1: TECHNICAL MATHEMATICS

| TERM 1 | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 |
|-------------------------------------|---|--------|--------|--|--------|--------|--|---|--------|--|
| CAPS Topics | Exponents and surds | | | Equations and inequalities | | | Nature of roots | Logarithms | | Analytical Geometry |
| Topics /Concepts, Skills and Values | 1. Apply the laws of exponents to expressions involving rational exponents. 2. Add, subtract, multiply and divide simple surds | | | Solve 1. quadratic equations (by factorisation and by using the quadratic formula); 2. equations in two unknowns, one of which is linear and the other quadratic algebraically or graphically. | | | <ul style="list-style-type: none">Explore the nature of roots through the value of $b^2 - 4ac$. | <ul style="list-style-type: none">Demonstrate an understanding of the definition of a logarithm and any laws needed to solve real life problems | | <ul style="list-style-type: none">Use a Cartesian co-ordinate system to determine:<ul style="list-style-type: none">the equation of a line through two given points;the equation of a line through one point and parallel or perpendicular to a given line; andthe angle of inclination of a line. |
| SBA | Investigation or project | | | | | | | Test | | |

2021 ATP: Grade 11 – Term 2: TECHNICAL MATHEMATICS

| TERM 2 | Week 1 | Week 2 | Week 3 | Week 4 | Week 5 | Week 6 | Week 7 | Week 8 | Week 9 | Week 10 |
|-------------|--|---|--------|--------|--------|---|--------|--------|---|---------|
| CAPS Topics | Analytical Geometry (continuation) | Functions and graphs | | | | Euclidean Geometry | | | Trigonometry | |
| | <ul style="list-style-type: none">Use a Cartesian co-ordinate system to determine:<ul style="list-style-type: none">the equation of a line through one point and parallel or perpendicular to a given line;and the angle of inclination of a line. | <div>1. Revise the effect of the parameters a and q on the graphs. Investigate the effect of p on the graphs of the functions defined by:</div> <div>1.1. $y = f(x) = a(x + p)^2 + q$</div> <div>1.2. $y = f(x) = ax^2 + bx + c$</div> <div>1.3. $y = \frac{a}{x} + q$</div> <div>1.4. $y = a.f(x) = a.b^x + q, b > 0$ and $b \neq 1$</div> <div>2. $x^2 + y^2 = r^2$</div> <div>$y = \pm\sqrt{r^2 - x^2}$</div> <div>$y = +\sqrt{r^2 - x^2}$</div> <div>$y = -\sqrt{r^2 - x^2}$</div> | | | | <div>Accept results established in earlier grades as axioms and also that a tangent to a circle is perpendicular to the radius, drawn to the point of contact.</div> <div>Then investigate and apply the theorems of the geometry of circles:</div> <ul style="list-style-type: none">The line drawn from the centre of a circle perpendicular to a chord bisects the chord;The perpendicular bisector of a chord passes through the centre of the circle;The angle subtended by an arc at the centre of a circle is double the size of the angle subtended by the same arc at the circle (on the same side of the chord as the centre);Angles subtended by a chord of the circle, on the same side of the chord, are equal;The opposite angles of a cyclic quadrilateral are supplementary;Exterior angle of cyclic quad. is equal to opposite interior angle;Two tangents drawn to a circle from the same point outside the circle are equal in length;Radius is perpendicular to the tangent; andThe angle between the tangent to a circle and the chord drawn from the point of contact is equal to the angle in the alternate segment. | | | <div>1. Revise the trig ratios in the solving of right-angle triangle in all 4 quadrants (Grade 10).</div> <div>2. Apply the sine, cosine and area rules.</div> <div>3. Solve problems in two dimensions using the sine, cosine and area rules</div> <div>4. Draw the graphs of the functions defined by:</div> <div>$y = k \sin x,$</div> <div>$y = k \cos x,$</div> <div>$y = \sin(kx),$ and</div> <div>$y = \cos(kx).$</div> | |
| SBA | Assignment | | | | | Test | | | | |

2021 ATP: Term 4: TECHNICAL MATHEMATICS GRADE 113