## Y12 : PRACTICE ASSESSMENT B. ACHIEVEMENT LEVEL ONLY.

Algebra.

1. Expand:
(a) $(5 x-4)^{2}$
(b) $(x-2)(x+3)(x-5)$
2. Simplify fully:
(a) $\sqrt{ }\left(9 c^{16}\right)$
(b) $\left(27 a^{3} b^{12}\right)^{2 / 3}$
3. Combine into one
log function: $3 \log a-2 \log b$
4. Simplify fully:

$$
\frac{3}{(x+2)}-\frac{2}{(x+3)}
$$

5. Solve:
(a) $9(x+2)=5(x-3)$
(b) $5 x^{2}+2 x-3=0$
(c) $-3 x>12$
(d) $\log _{4} x=4$
(e) $\log _{b} 64=2$
6. Solve:
(a) $\left(x^{2}-9\right)\left(x^{2}-4\right)=0$
(b) $\frac{3(x-4)}{4}-\frac{(x-2)}{2}<2$
7. Rearrange the formula $V=\pi r^{2} h$ to make r the subject.

Calculus.

1. Find the gradient
of $y=x^{3}$ at $x=2$
2. Find the $x$ value of the point on the curve $y=x^{2}+2 x$
where the gradient equals 8 .
3. Find the $x$ value of the points on the curve
$y=2 x^{3}-6 x$ where the gradient is zero.
4. Find y if
$y^{\prime}=5 x^{3}+7 x^{2}+1$
5. Find the equation of the curve given that $f^{\prime}(x)=12 x^{2}-2$ and the point $(3,4)$ is on the curve.
6. If $y^{\prime}=x(6-x)$
find $y$ if $x=1, y=10$
7. Given that
$f^{\prime}(x)=4 x+3 x^{2}$
find $f(x)$ if $f(1)=2$
