The following problems are good practice for the upcoming test. Some are challenging, but completely within the scope of the material we have covered. Round any final calculator answers to 1 decimal.

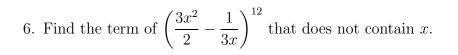
1. Compute exactly

(

(i)
$$\sin^{-1}(\sin(5\pi/6))$$

(ii) $\sin(\sin^{-1}(5/6))$
(iii) $\tan(\sin^{-1}(-2/3))$
(iv) $\sin^{-1}(\cos(\sin^{-1}(1/2)))$
 $\underline{g/\lambda/z-:sue}$
(k) $\underline{g/\mu:sue}$

- 2. Simplify $\sin(\tan^{-1}(a/b))$, giving your answer in terms of a and b.
- 3. Recall that $\cos(2A) = \cos^2(A) \sin^2(A)$ for any angle A. Using this, simplify $\cos(2\sin^{-1}(x))$ where $-1 \le x \le 1$.
- 4. Expand $(2t + 3/t)^5$ using the binomial theorem.
- 5. Simplify $\binom{5}{2} \binom{4}{2} \binom{4}{1}$.



- 7. An arithmetic sequence has $a_{17} = -40$ and $a_{28} = -73$. Find a_1 .
- 8. An arithmetic sequence has $a_{11} a_8 = 12$ while $a_{15} = 20$. Find a_{16} .
- 9. Find the tenth term of the geometric sequence $7/2, -7/4, 7/8, \ldots$
- 10. A geometric sequence has $a_4 = 5\pi$ and $a_6 = \pi/5$. Find a_1 .

ans: 625π

4201\7− :sns

0 :sns

8 :sns

ans: 24

Ans: 55/144

and $a = a/\sqrt{a^2 + b^2}$

ans: $32t^5 + 240t^3 + 720t + 1080t^{-1} + 810t^{-3} + 243t^{-5}$

11. Find the sum of the arithmetic series $-1 + 4 + 9 + \dots + 54$.

815 :sns

12. Find the sum of the first six terms of the geometric series $-1 + 1/4 - 1/16 + \cdots$.

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13. At the beginning of each year you deposit P into an investment which pays 8% compounded annually. The investment is worth \$40,000 at the end of ten years. How much were the annual payments P?

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