True/False

__F__1. For a p-series to converge, p must be less than or equal to 1.

__F__2. In the application of the Integral test, the sum is equal to the value of the integral.

__T__3. If $\sum_{n=1}^{\infty}(-1)^n a_n$ converges, then $\sum_{n=1}^{\infty}(-1)^{n+1} a_n$ converges.

__T__4. If $\lim_{n->\infty} a_n \neq 0$, then $\sum_{n=1}^{\infty} a_n$ diverges.

__F__5. If $0 \leq a_n \leq b_n$ and $\sum_{n=1}^{\infty} a_n$ converges, then $\sum_{n=1}^{\infty} b_n$ diverges.

Determine the convergence or divergence for each sequence with the given general term. Choose the test used from:

(A) N^{th} term test (B) Integral test (C) Geometric Series (D) P-Series

(E) Telescoping (F) Direct Comparison (G) Limit Comparison (H) Alternating Series test

	Series	Test used	Converge or Diverge?	Work:
6.	$\sum_{n=4}^{\infty}\frac{1}{3n^2-2n-15}$	G	Converges	Compare to 1/n^2
7.	$\sum_{n=1}^{\infty}\frac{n}{(n^2+1)^2}$	B	Converges	
8.	$\sum_{n=1}^{\infty}\frac{n}{2n+3}$	A	Diverges	
9.	$\sum_{n=1}^{\infty}\frac{1}{n^3+1}$	F	Converges	
10.	$\sum_{n=1}^{\infty}\frac{1}{2+3^n}$	F	Converges	
11.	$\sum_{n=1}^{\infty}\frac{\sqrt{n}}{n}$	D	Diverges	p-series p<1

12.	$\sum_{n=1}^{\infty} \frac{3}{n(n+3)}$	E	Converges	
13.	$\sum_{n=0}^{\infty} 3\left(-\frac{1}{2}\right)^{n}$	C	Converges	
14.	$\sum_{n=1}^{\infty} \tan\left(\frac{1}{n}\right)$	G	Diverges	Compared with 1/n
15.	$\sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{n+1}$	H	Converges	

Find the sum of the following convergent series:

16. $\sum_{n=0}^{\infty} \left(\frac{2}{9}\right)^{n}$ **9/7**

17. $\sum_{n=1}^{\infty} \frac{3}{n(n+3)}$ **1 5/6 (11/6)**

Can you apply the Integral test to the following? (yes or no)

_yes_____18. $\sum_{n=1}^{\infty} \frac{n}{n^2+1}$

__no ____19. $\sum_{n=1}^{\infty} \frac{\cos \pi n}{n}$

Determine if the following series (A) converge absolutely, (B) converge conditionally or (C) diverge.

__B___20. $\sum_{n=1}^{\infty} \frac{(-1)^{n+1} n}{\sqrt{n}}$

__A___21. $\sum_{n=1}^{\infty} \frac{\cos \pi n}{n^2}$

__C___22. $\sum_{n=1}^{\infty} \frac{(-1)^{n+1} n!}{2^n}$

__A___23. $\sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{(n+1)^2}$

Approximate the sum of the series with an error less than 0.001.

__.316667_24. $\sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{2n!}$

__1.0368__25. $\sum_{n=1}^{\infty} \frac{1}{n^5}$ (HINT: Use the Integral)